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international photo technik

The magazine in English, German and French for applied medium- and large-format-photography.

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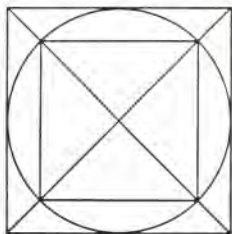
Front cover:

This photo was taken from a new series which the French photographer Paul Genest, Paris, produced specially for International Photo Technik.

Camera data: Linhof Kardan Master L, 150 mm Schneider Symmar, 4×5 inch Kodak Ektachrome sheet film, Balcar electronic flash.

Arrangement: the set was constructed of mobile wall partitions which are normally used in connection with furniture photography. The lines on the floor, which suggest wooden planks, were drawn by hand. The mural, a strip of photo-wallpaper, was used to give the impression of landscape outside.

Photo: G. W. Erb, West-Germany ▶



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If one studies the photo market close enough, it soon becomes clear that certain changes in consumer tastes have been taking place for some time. The attitudes towards these changes may vary considerably, since it very much depends on whether one sees them from the point of view of economics, marketing strategy or consumer-orientated interests.

Even in the specific case of camera design, new tendencies may be observed which draw attention to the changes mentioned. The consumer, i. e. the professional as well as the amateur, has been spoilt to such an extent by the photo

The genuine pro uses his camera as a tool. The client states his requirements and the photographer knows how to interpret and pass these on to the camera, using the experience, skill, technical tricks and creative gifts at his disposal. Now many prefer to call themselves "experts" in order to avoid the dubious term "professional" photographer, for it is quite true that many a so-called amateur produces results worthy of a qualified commercial photographer. We are also familiar with the would-be expert who appears to regard his camera as a technical miracle which does the

that many people lack the courage to be creative.

Every day the editor receives portfolios of pictures which are reputed to have been specially selected, and it is no exaggeration to speak of a standstill in the creative level of work submitted. And we have heard the same opinions from similar publications as this: Is the increasing perfection in camera construction possibly to blame, at least in part? It might appear so at the first glance, but it should be openly admitted that, for a certain section of the photographing public, the innovations in electronic

Have we reached the terminus?

equipment industry that he now expects cameras of increasingly technical sophistication and ease of operation.

The pro demands apparatus which relieves him of the drudge of work. He would like—and this was a long-nourished dream of many an amateur—to merely concentrate on the click of the shutter only, the trouble is, some of them confuse this with creativity. He is even too lazy to measure the exposure himself—too much work, he thinks. The f/number is selected by a robot after he has fed in a random exposure time.

On the other hand, the amateur longs for the technology of the professional. He finds himself confronted with apparatus of increasingly greater complexity, suddenly obtains pictures in a quality of which he never dreamt he was capable and strives higher and higher for improvements of a technical nature. However, the actual results, the pictorial contents, usually remain far below the technical potential.

whole job for him, rather like an automatic watch which requires no winding. Countless others claim to be "concerned" with photography but, in fact, 90% of camera-owners are snapshot-plebs, no matter what one cares to call them. If they are content with the pretty snap they shot of some family event, then that is none of our business. The readers of this magazine are more likely to have completely different objectives in mind. Often the *possession* of photo equipment is an end in itself and nothing more than a status symbol. Apart from the automobile, there is probably no other technical possession which has so keenly absorbed the interest of mankind than the photographic apparatus.

The enormous drive behind the desire to make pictures is probably best expressed in the sales turnover of the photo-finishing industry. Behind it all is perhaps the longing for immortality, the need to stop the inevitable march of time and capture a moment on paper. The result, at any rate, is a boom in picture production.

Of course, this is all very desirable from the production side of the economy, and there is generally little to be said against it. It is a pity, however, that such strides in technical perfection are not reflected in better photography. One is inclined to think that this is due to general disinterest or apathy, and there is probably some justification for thinking so. More exactly, however, it is simply

control and motor-drive attachments represent a genuine advantage. The photographer is free to concentrate more closely on his subject and how best to record it. A great deal more film was previously wasted due to faulty exposure or other wrong adjustments. Unfortunately, many of the owners of such automatic apparatus are not fully aware of the manifold possibilities open to them. One can see from the results that the increased scope has either not been used at all or has been inappropriately applied.

Touching briefly on the subject of print development, what has the photographer actually gained in recent years as far as permanent, visible quality is concerned? That is, apart from a reduction in price and a wider choice of paper surfaces. It is usually the professionals who have benefitted most from effective improvements in, for example, color film emulsions, and then only when they have taken extra trouble.

From a purely objective point of view, photography has become simpler, indeed. Developments in camera technology, optics and film emulsions are progressing continuously. About taste, one is entitled to a personal opinion. Experts agree, nevertheless, on a clear definition of what they expect from a good commercial photographer, and it is in this respect that one has begun to wonder if many colleagues in the photographic trade have made any real progress in the last twenty years. M. W.

This is an exemplary photo to demonstrate the artistic use of the Scheimpflug law and, at the same time, it serves as a model for good composition and harmonious use of color. Nothing in this picture has been left to chance, neither the direction in which the stalk of the pumpkin points, nor the color of the dress and umbrella.

The pumpkin in the foreground has been filled in with electronic flash.

Photo: Paul Genest, Paris. Linhof Kardan Master L, 150 mm Symmar, 4×5 inch Kodak Ektachrome sheet film.

Influencing the gradation in black-and-white photography

by Hans Bortsch

The positive

Thanks to the wide range of grades in which the majority of printing papers are available, controlling the contrast in darkroom technology has become a matter of routine. That is all very true when printing from normal negatives and the requirements are also average. Yet for those who are a little more fastidious it is no secret that the tonal qualities obtained with "extra soft" or "extra hard" emulsions are not comparable to the grades "normal" to "soft". Darkroom wizards who are skilled in the preparation of hand enlargements therefore know why they limit their variety of grades to this range. There are even some who decline to use any paper other than "special" and carry out contrast corrections by altering their developer accordingly. At the very most exacting level this method is probably the most suitable, assuming that the original negative can be processed to within reasonable tolerances. In view of the excellent b/w negative developers on the market today, this calls for no special skill. It suffices—especially in large and medium-format photography—to work with one of the well-tried fine-grain developers of the compensating type; it is wise to choose one which is compatible with all the film sensitivity ratings likely to be used for the simple reason of economy. Although there is a wide choice of suitable developers with the above characteristics, the author can only mention, as representative, a number of products with which he has personally had good experience: Agfa Atomal, Tetenal Ultrafin mit Aktivator (same concentra-

tion for different film types), Emofin, Neofin, Promicrol, etc.

It is not the intention of the present contribution to go into the special qualities of each recipe. All the developers mentioned above offer fine grain structure and the opportunity to control the contrast by simple means. Anyone who understands how to handle these products will soon work himself into a position where he requires only one grade of paper and a set of two to three ready, positive developer combinations. On the basis of many years of experience the author can claim that, apart from obvious, foreseeable exceptions, 95% of one's pictures can be worked out according to this method, and in a quality which is unattainable by any other.

The prerequisite is that two to three developing solutions, each producing a different degree of contrast, must be on hand. Centrabrom, Eukobrom and Dokumol—all manufactured by Tetenal of Hamburg—guarantee extremely safe and uniform development of high flexibility. Fogging is unusual even in cases where the normal developing time has been drastically prolonged.

Wherever the highest print quality is called for, and especially in the case of enlargements over 11×14 in., it has proved most rewarding to commence processing in Centrabrom to bring on the highlights (approx. 30 sec.), continue in Eukobrom for 1 to 1½ minutes until the image is almost fully developed and then finish off in Dokumol where the last nuances in the denser portions receive differentiation. To avoid dragging one solution into the next, it is recommended

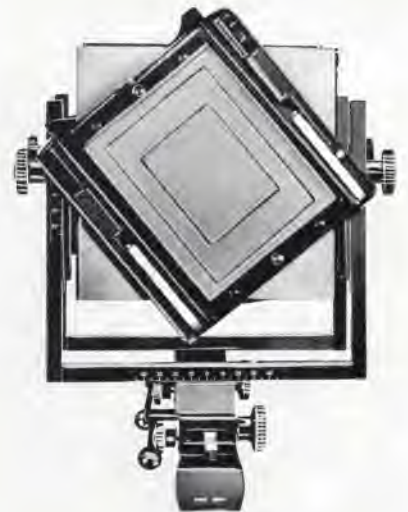
to rinse the paper in running water. The total contrast range obtained by this method is not much greater than a correctly handled print in a single developer. The differentiation within the given range of tones, however, is much finer and more subtle than can be produced by any other darkroom technique.

In some instances this method even saves one the trouble of burning in dense parts of the negative or the local application of heat.

Those people who are principally interested in the multidish technique to avoid using or storing several grades of photo paper, will find that they get along very nicely with Centrabrom and Eukobrom. Their usefulness has been proved in routine labs for the control of contrast, particularly in conjunction with the grade "special".

With harder negatives it is better to let the image fully develop in Centrabrom, waiting for the tonal differentiation to build up in all regions of the picture.

Decisive for the tonal gradation when working with two baths is the time spent in each solution. It should be noted that the total duration should not exceed the time required to develop a print in a single bath—at least not by too much. Otherwise the treatment in the second (or third) stage will not have quite the same degree of influence. It is obvious that application of this principle to paper grades other than "normal" extends the manipulative scope to such an extent that it is difficult to imagine cases where influencing the gradation of the original negative itself is still necessary. It might be worth while making a copy negative of lower gamma



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where a large number of prints has to be made and individual treatment of each enlargement as described above appears to be too costly. Before taking a closer look at this subject, here are a few tips—some of them dating back a long way—how to soften the contrast of all grades of paper.

1. Application of the Sterry Effect

When faced with printing a very hard negative and/or one lacks paper of the grade "soft" and yet wishes to keep the image contrast as low as possible, one is recommended to give such a print 3 to 4 times the calculated exposure and then treat it in a 0.5% solution of potassium bichromate. After washing thoroughly, one can proceed to develop it as normal or handle it according to the two-bath method. In the Sterry Effect the latent image is destroyed in the surface layers of the emulsion leaving only a softer image to be developed.

2. Flash exposure

After normal exposure and an initial development of about 15 seconds the print is taken from the dish and given a second, very brief exposure, preferably by indirect, diffuse white light. The light intensity should amount to about $1/50$ to $1/60$ of the main exposure. Fogging is unlikely to occur on account of the initial development.

3. Partial or total development in suitable negative developers

In this respect two vials of Neofin Blue diluted in one liter (1.056 US quarts) gives very good results; likewise Paranol diluted 1:10 or 1:20. In both cases develop fully. A shortened development in negative developer of high dilution is not recommended for all those cases where the entire range of tones inherent in the negative is to be retained.

The negative

Experienced photographers will always try to achieve optimum negative contrast at the exposure stage. As long as the subject can be manipulated to keep contrast within the ideal range, this is the method to which preference should be given. In a studio, of course, this is nearly always possible. In large and medium-format photography the use of interchangeable magazines and sheet film holders enables one to adapt the type of emulsion and/or development to the prevailing motif contrast. Even when only one type of film is available on location, it

can be overexposed and given a shorter development in those instances where contrast exceeds that which the film can normally cope with. This method can be applied to all those developers mentioned at the beginning (possibly with the exception of Emofin).

Another way, which is less recommendable, is to select a type of film which, through its very nature, is "soft-working". Since the difference in contrast index between modern slow and high-speed film emulsions is no longer so pronounced as it used to be in earlier days, this solution should only be resorted to in an emergency—say, when one has forgotten the extra magazine. Then it will be necessary later to keep grain size down to a minimum by turning to one of the special developers such as Microdol or Emofin. After all, these high speed films are intended for low-light photography and not as a means of manipulating contrast.

In all those instances where the above film exposure/development techniques are of no avail or too late and the initial recommendations on how to carry out corrections at the printing stage are uneconomical (e.g. mass prints), the only remaining possibility is to manipulate the negative itself. If the latter is unique, a duplicate should be made. Through choice of duplicating film and appropriate development—over or under—it is possible to carry out a certain amount of correction at this stage. An even further degree of manipulation is possible through subsequent chemical treatment and the following are a few recipes:

Conversion of the silver image

through color toning

Here the author has most satisfactory experience of converting the image into a ferric blue one. A subsidiary effect is an improvement in the fineness of the grain structure, a fact which is of inestimable benefit in contrasty—and hence usually overexposed—negatives. Three solutions according to the following formulas should be made up:

Solution A

Water	1 liter
Potassium ferricyanide	10 gram
1% solution potassium bichromate	1.3 c.c.

Solution B

Water	1 liter
Ferric ammonium sulphate	21 gram

Solution C

Water	1 liter
Oxalic acid	50 gram

The solutions must be made up in equal parts before use by subdued light. After conversion of the image the negative is rinsed and placed in a 3% thiosulphate solution. With this not very complicated method one can reduce even excessive contrast to a reasonable level.

The so-called "reducers" (e.g. Farmer's) have a similar although somewhat less drastic effect, the reduction taking place principally in the areas of greater density (highlights). A prototype in this category is the ammonium sulphate reducer. There is even a variety of ready-made packs on the market. All negatives treated in this way must be thoroughly washed afterwards, because even the slightest traces of sodium thiosulphate can cause stains. Old negatives should be left to soak for slightly longer in water before treatment.

During the initial stage of the reduction process a whitish turbidity may appear in the denser portions of the negative. As soon as the degree of reduction seems right, the negative should be brought straight to the fixing bath and then washed.

Composition of the Agfa formula 701

Distilled water	1 liter
Ammonium persulphate	50 gram
Ammonium hydroxide, concentrated	40 c.c.
Sodium chloride	20 gram

The solution is ready for use; process time about five minutes.

Another well-proven and simple-to-use reducer is the benzoquinone type which is made up as follows:

Distilled water	1 liter
Benzoquinone	10 gram
Sulphuric acid	30 c.c.

This solution oxidizes the silver to silver sulphate, the benzoquinone being reduced to hydroquinone. The reducer cuts back the dense highlights more in relation to the areas of lesser blackening. Those are the methods of reducing contrast which do not require a complete re-development of the negative. Below is one reliable method which does call for re-development. The formula is as follows:

Water	1 liter
Potassium bichromate	10 gram
Hydrochloric acid	10 to 20 c.c.

The negatives are bleached by subdued light until the surface becomes more or less a uniform white. They should then be

exposed for about a minute to a 60-watt lamp at a distance of 3 feet. Re-development then follows in one of the soft-working, fine-grain developers (Agfa Atomal, Neofin Blue or Neofin Red). Contrast and density may be judged by transmitted light. Once the latter appear correct, the negative should be removed immediately from the developer and immersed in rapid fixer. Wash as usual. It is interesting to observe that the contrast-flattening effect diminishes as the amount of hydrochloric acid increases. The most pronounced cut in contrast index will be achieved with an addition of hydrochloric acid ranging between 10 and 12 c.c.

Contrast increase

For intensifying negatives and, at the same time, increasing the contrast index, there is quite a variety of well-tried formulas. We are concerned here only with those which exclude an increase in grain size, a phenomena which often accompanies such intensifying processes. The color toning methods are the most obvious solution in this context.

In these processes the image assumes a "warmer" tone which, on enlarging or contact printing, keeps back a certain proportion of the blue component to

which the positive emulsion is most sensitive. This effect is, indeed, likewise present in all semi-physical developing processes to a small degree and brings about a slightly harder print than is indicated by a visual or densitometric inspection of the negative. This difference between the printing gamma and the densitometric gamma is known as the color coefficient.

The most important chemistry in this category is the argentite process, gold toning and copper intensification. For an argentite conversion of the image we have the following recipe according to Power and Strauss:

Bleaching solution

Potassium ferricyanide	30 gram
Potassium bromide	15 gram
Sodium carbonate	15 gram
Water	1 liter

Toning solution

Toning solution

Sodium sulphide, crystals	10 gram
Sodium thiosulphate	8 gram
Water	1 liter

Treatment of the negatives takes place first of all in the bleaching and then in the

toning solution, taking care to wash for ten minutes between each stage. In the bleaching bath the silver image is converted into one of silver bromide. During the toning stage colloidal argentite is formed. Should this measure not prove sufficient, there always remains the possibility of finishing off in a gold toning bath which shifts the color of the image towards red. It is made up as follows:

Gold chloride	1.2 gram
Ammonium sulphocyanide	14 gram
Water	1 liter

If one then puts this red-toned negative through the developer again, the result is a brown image of maximum contrast potential.

Perhaps a concluding comment might be allowed. Technically perfect photos, which are the result of the exploitation of the almost unlimited scope of modern photographic technology, no longer meet with the same appreciation as formerly, even where this is due. This is not difficult to explain, since technical perfection has apparently become an *end in itself* in many other spheres of human activity. An even greater tendency in this direction should be avoided generally and, particularly, in the field of photography.

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Picture shows processor without side cover.

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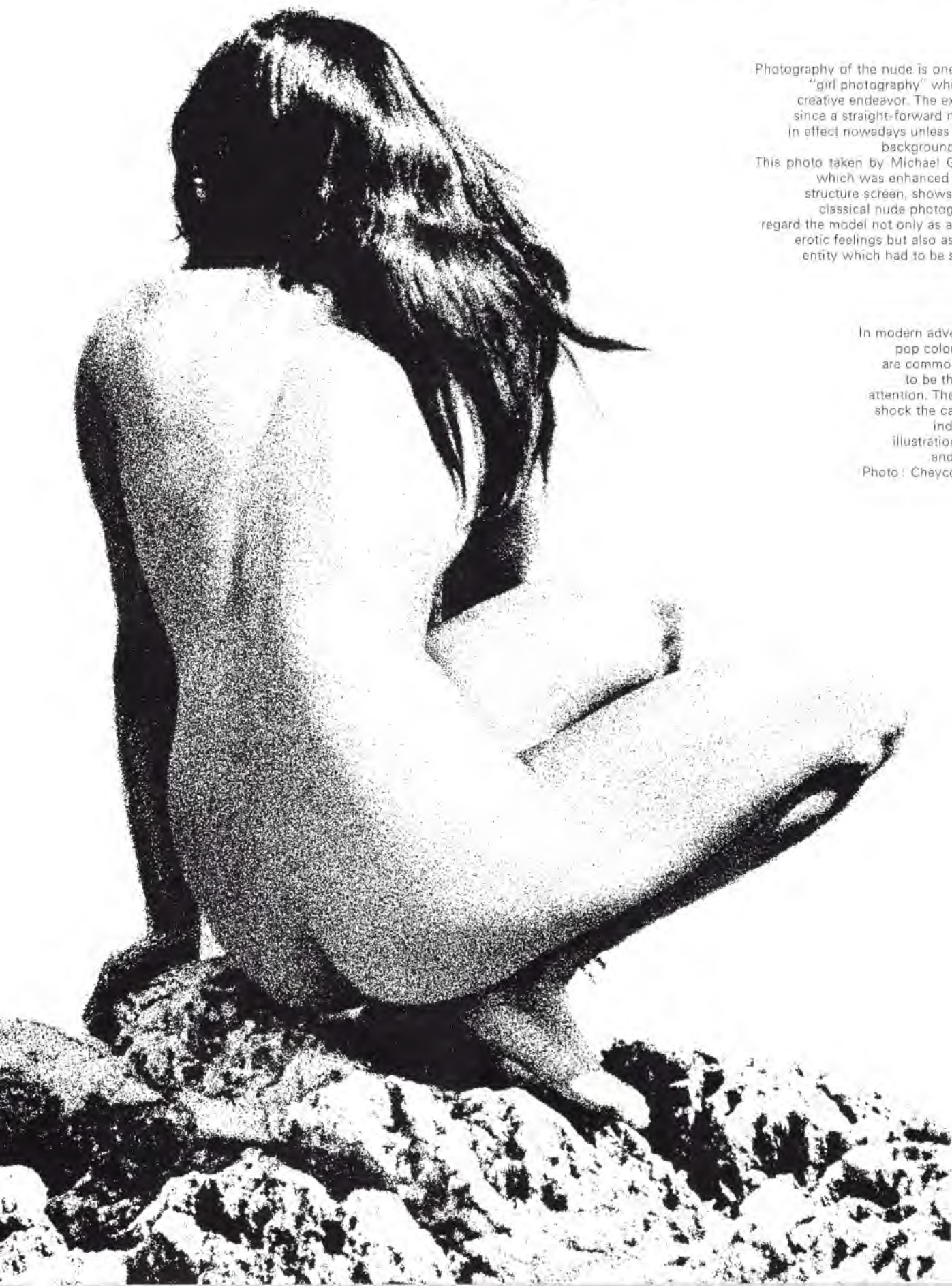
Girls are still tops

Photography of the nude is one of the few fields of "girl photography" which still benefits from creative endeavor. The experiment dominates, since a straight-forward nude photo is lacking in effect nowadays unless the composition and background are really imposing. This photo taken by Michael Gnade of Düsseldorf, which was enhanced with a special grain-structure screen, shows inclinations towards classical nude photography which used to regard the model not only as a means of conveying erotic feelings but also as a well-proportioned entity which had to be shown as such in the picture.

Color page right:

In modern advertising photography, pop colors and unusual poses are common, since it is believed to be the best way to attract attention. The picture should even shock the casual reader and thus induce him to study the illustration, the goods on offer and the advertising text.

Photo: Cheyco Leidmann, Munich.









▲ In figure-photography indoors one of the most difficult problems to be mastered by the photographer is that of balanced lighting. He must fill in the darker areas either with the aid of white card or a flash unit to prevent loss of detail in the shadows. In this photograph, however, the photographer preferred to leave the contrast illumination as it was, since he did not wish to destroy the prevailing atmosphere for the sake of a perfectly illuminated photo.
Photo: Alfred Särchinger, Erfstadt.



▲ Group photographs are subject to their own particular laws. If two young girls are photographed together, it is likely that each model will try to outshine the other. It is the task of the photographer to act as a genuine umpire and direct the girls in such a way that the client sees at least outward harmony in the finished photograph. In this case one can say that the photographer, Harry R. Becker, has succeeded.

Color page left:

Snapshots from one's holiday or a picnic excursion can sometimes lead to delightful pictures as, for example, this shot taken by Bernd Schuler, Munich.



▲ Exotic girls were also very popular amongst advertising photographers in Europa for some time. Here is a successful shot taken by Hermann Brehm, Nuremberg.

Jürgen Dommrich, the author of the group below on the right, did not have so much trouble, since in the case of couples mutual adjustment has usually taken place anyhow. ▼





Girls are still the adman's favorite

The fair sex has always been employed successfully by the advertising branch, in still photography, motion pictures or television, to sell all manner of goods. The female body, especially that of a younger girl, possesses such an undeniable erotic charm that there is practically no item of merchandise which cannot be closely associated with some part of the former. The cosmetics industry, for example, would be completely lost without the face, hands, or even the legs of a beautiful woman to demonstrate the use of their products. An American Corporation, it is true, once tried to present the necessary information in their catalogues in a straight-forward, matter-of-fact way but they were soon forced to realize that the market was already "spoilt" to such an extent that an advertising campaign without a person as a center point had little chance of success. They were very quick to call back the girls and thus save their sales figures from plunging too far. The tourist trade, one of the latest to benefit from the affluence in the advertising world, has abandoned the poster showing some beautiful landscape or city landmark in favor of a bathing-belle supported by an appropriate text. At first one thought this phenomenon was merely an accompanying symptom of the general liberalisation in sexual matters and that after a certain degree of saturation the effect of such illustrations would decline. However, recent developments would seem to indicate that the opposite is true: the market research institutes have gathered evidence to prove that consumers in western countries such as Germany, France, Italy and the Scandinavian countries (less so in Spain, Portugal, Switzerland and Austria), can still be induced to buy associated goods by a photograph of an attractive female.

Be that as it may, the photographer is, at any rate, not faced with the decision whether to change or not. He may continue to employ girls as an effective photographic medium and concentrate his technical skill on producing the best possible results. In fact, the market can still stand a lot more, and here we are thinking of advertising, fashion, beauty or even as a "filler" in furniture photography!





Page 15

Reclining nude; this photo was taken by Paul Genest, Paris, for an advertising poster in the Parisian Metro.

Page 14

That lighting technique is the alpha and omega in color photography is an opinion shared by H. W. Hesselmann, Munich, as can be seen from this shot taken with the aid of a soft toplight. The window area is sufficient motivation.

Asahi Pentax 6×7, normal lens, Kodak Ektachrome professional.

Here is another contre-jour window shot without any deliberate fill-in to serve as a comparison to the picture on page 13.

Photo: Werner Horn, Gelsenkirchen.

Infra-red thermography

by Dr. Rusch

Thermography is understood as meaning the (photographic) recording of objects by means of infra-red rays. Thermography can be exploited either to take exact temperature measurements or to show up small differences in temperature. It therefore has countless applications in technology, science and medicine. To differentiate between this field and that of thermography with fluid crystals, the present subject is also called electronic or tele-thermography.

The basics of thermography

Just as one can measure the temperature of some brightly glowing body (such as the filament of a tungsten lamp), so it is perfectly feasible to determine, with the aid of the amount of radiation emitted, the temperature of many different kinds of body with a much lower temperature. Yet, the mere *measurement* of temperature by means of infra-red rays is not really thermography; it is better known as radiation thermometry or infra-red radiography. The difference here is rather like comparing a color-temperature measurement of a brightly glowing body and a color photograph of the latter.

A color photograph is an excellent means of providing exact information as to where the hottest and cooler parts of a glowing object are to be found. Thermography supplies, through an image of light and dark areas, an impression of much lower temperature patterns. The most marked difference in the two

methods of determining surface temperatures in the form of a picture is to be found in the necessary temperatures. Whereas color film is capable of recording incandescent bodies at temperatures above 1000°C ., the thermographic method still obtains images at down to -20°C ! Of course, between these two fields there is a range of radiation which can be recorded with the aid of infra-red film, infra-red image converters and infra-red television.

Thermographic apparatus

A thermographic system consists of a special infra-red camera and an associated indicating unit. (See fig. 1). The heart of the camera is a detector for the heat rays. Today one usually employs for this purpose (expensive) photoelements made of indium and Antimony which, on cooling with liquid nitrogen,

are sensitive to radiation of only 1 to $5\text{ }\mu\text{m}$. So far nobody has succeeded in constructing—either out of this or any other detector material—an entire receptor plate which could be used in a manner similar to television camera tubes. For this reason the detector is made so small that it scans just one picture element and no more. With the aid of a parabolic mirror, only a small detail of the object is reflected onto this detector. As seen in fig. 1, the camera in this instance also incorporates a rotating, six-facet mirror and an oscillating mirror. The function of the two latter mirrors is to guide the field of vision of the camera, line for line, across the object. In this fashion, the various radiation intensities of the individual points of the object impinge on the detector at predetermined intervals. The detector converts the intensities into electric signals and passes the information on to the indicating unit. The latter then reforms the optical-mechanical breakdown of the image and displays a visible picture on an oscillograph screen in keeping with the infra-red radiation from the object. Within certain limits, picture brightness and contrast can be adjusted to the actual requirements by means of controls on the indicating unit.

Recording thermographic images from screen displays

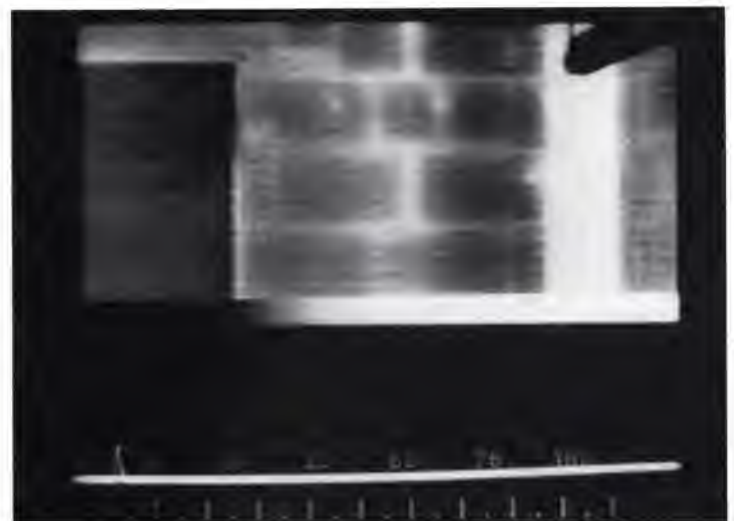
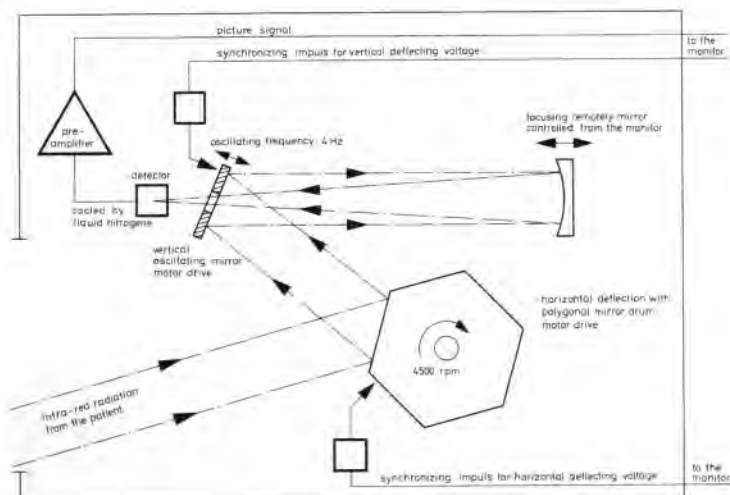
The indicating unit or monitor offers the observer a 3×3 -inch fluorescent image

Fig. 1 left:

Schematic representation of a thermal scanning camera.

Right:

An example of how thermography is applied in civil engineering. The camera is located in a cool laboratory and is aimed at a wall between the cool lab and the warmer corridor outside. Since those parts of the wall with a "better" caloric conductivity are warmer, they appear lighter in the photograph. The white (warm) strip on the right is a concrete column. Although the pumice blocks in the wall insulate quite well, the wooden door acts as an even better barrier (rectangle on the left). The thermogram is even capable of revealing the poorer insulation properties of the mortar. Proof of the validity of such measurements can be later seen in the deposition of dust on the areas mentioned.



rather similar to that of a TV screen. One particular model provides 16 pictures per second with 100 lines, another 2 pictures per sec. with about 150 lines and a third make—after a storage period of two seconds—can display 50 pictures per sec. with 600 lines. Normally, the warmer portions of the object appear brighter on the monitor and the cooler portions are correspondingly darker. The majority of IR recording systems incorporate some kind of neutral wedge by means of which the image contrast can be controlled. Whereas differences in temperature are obvious from the display screen, measurement of the actual values is only possible if a standard means of comparison has been included in the picture.

The usual way of documenting such images is to use Polaroid film. This has the well-known advantage of being able to check the quality of the pictures right away and pass them on for evaluation. 35-mm stock is also used, chiefly to keep down costs.

Color pictures from black-and-white screen displays

Thermograms may also be recorded on color material. This is done not so much for aesthetic reasons but to enhance the essential information so that, with the aid of coded isotherms, it is more easily grasped. Yet, where does the color come from? Conventionally, the color coding is introduced with the aid of the isothermal function of the monitor or visual display unit. Special electronic circuitry permits one to isolate one particular shade of gray—representing a specific temperature

range—and enhance it alone with maximum brightness (similar to tonal separations in photo-graphics). Various suitable settings of these isotherms are photographed one after another onto *one* sheet of film, interposing an appropriate color filter for each successive exposure. Provided the object remains



Female torso in the form of a thermogram. Pictures of somewhat smaller section than this are, in fact, used to detect cancer of the breast. The range of temperatures shown cover about 5 degrees Centigrade; the individual isotherms (i. e. each color) correspond to about 0.5 to 1 °C. The "cold" patch above the breast bone of the model was caused by a metal pendant.

Below left:

The author at the thermographic visual display unit. One can see the glow from the warm electronic circuitry, the hands, face and pipe of the author.

Below right:

Thermogram of the inflamed (right) knee and sound knee joint of a young man.

stationary in front of the camera for the necessary exposure duration, the various isotherms will be recorded in correct register to form a colored isothermal picture. Once again, Polaroid or 35-mm film is the usual material on which such images are photographed. This method of documentation bears two potential sources of error, however. The object may move and thus upset correct register of the patterns or the choice of isotherms may not be at all favorable. The author has had success with the following method and can recommend it: The thermograms are recorded on 35-mm black-and-white film. Enlargements of these negs onto sheets of contrasty lith film are then prepared in order to extract sets of separate isotherms. Finally, these tonal gray separations are copied through color filters to create a color-coded isothermal picture. The accompanying color photograph is an example of this method.

The value of thermographic pictures

The value of such photos is, of course, not restricted to the undeniable fascination exerted on the observer who now sees familiar objects in a completely new "light". The significance of such pictorial representations of body temperatures is, rathermore, to enable the viewer to easily discover deviations in the temperature of certain zones of the object under investigation and to help him localize them on the object itself. In many fields of thermometry it is important to have facilities for continuous observation and recording, since in this way thermal processes can be controlled or surface faults may be noticed more easily.





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Movement in the 8x10 inch format

by Ulrich Hohloch

Many photographers are bound to have asked themselves how they can possibly cope with movement when using an 8x10 inch view camera. It is no secret that the problem of introducing movement is much easier to master in 35 mm photography, but there are few photographers who would have the courage to tackle such a problem with a large-format camera. We know of someone who has done just that: an advertising photographer in Stuttgart by the name of Ulrich Hohloch BFF. His enthusiasm for the subject itself is immediately apparent on looking at his photographs. "Die Reproduktion Nr. 16", a Kodak brochure, has praised his work and published a few examples. The method involved is so unusual that the editor asked Ulrich Hohloch to write a short description of the technical details. The following is the report he sent us.

The simplest way of showing movement in still photography is, of course, to employ stroboscopic flash. At present, however, there is no stroboscopic equipment with a flash so intense that it is possible to obtain results which are certain and free of colour bias. This is particularly true when one refers to the sheet film formats and their relatively slow speed (Ektachrome 32 ASA/16 DIN).

One therefore had to seek a new way, and the final solution turned out, in fact, to be relatively simple: a rotary focal plane shutter!

The drawback was that it had to be custom made, including the necessary drive. It consists, first of all, of a black cardboard disc in which symmetrically arranged slits of equal width were cut. The latter is driven by a 12 volt electric motor the speed of which is regulated by means of a resistor. When the disc is

mounted and revolved in front of the lens, the slits permit light from the subject to pass through the lens intermittently for only a fraction of a second. To express this in another way: the passage of a movement is divided up into individual sections of time by the revolving disc.

Of course, photographs with such a device are unlikely to be perfect at the first attempt. The high cost of a test series with large format film, as mentioned above, will prove to be a costly business. It is therefore better to commence a test series with a roll film camera (EHB 23 DIN) in order to get the various factors involved into their correct relationship. Correct coordination of the following variables is necessary: speed at which the subject moves, speed and direction of rotation of the shutter, number and width of the slits in the latter, intensity of the illumination falling on the subject, exposure time of the individual movement stages, working aperture and, finally, the compound exposure time. The following are a few tips to solve the above technical problems:

1. Width and number of the slits in the rotary shutter: the width of the slits has to be determined, in the first place, through tests, e. g., slits which are too narrow will result in too short an exposure time (underexposure) too broad a slit width will result, on the other hand, in too long an exposure (in addition, unsharpness caused by movement becomes too obvious). The number of slits and speed of rotation give, in conjunction with the width of the slits, the number of the individual phases into which the subject movement is divided.
2. Speed of subject, respectively, object: the faster an object moves across in

As the author has explained in his text, a special device had to be developed in order to realize these photographs. There is nothing like it on the photographic market at present. The apparatus which the author constructed is a simple rotary shutter with a special drive motor (see main text) which uncovers the lens for a fraction of a second to make a series of partial exposures. It was thus possible to capture movement on the maximum-resolution format of 8x10 inches. The effect is truly amazing: the individual phases of each movement are so distinct that the original aim of an enhanced information transfer has been surpassed by the aesthetic appeal.







Further subjects which were taken using the rotary shutter.



front of the camera the faster the disc will have to revolve. Yet, the faster and briefer the slits uncover the camera lens, the weaker the light will be which reaches the film. The result is that in the case of a relatively high object-movement speed the illumination intensity will have to be correspondingly higher. On occasions, illumination of 10,000 Watt will have to be concentrated on a very small area.

3. Working aperture and total exposure time: the number of the phases, the total exposure time and the film speed rating are all closely connected with the selection of the correct aperture.
4. Direction of movement of the slits: whenever the movement direction of the slits is opposed to that of the object, better and sharper images of the individual phases will be obtained.

After the above problems have been solved and systematic tests carried out on 6×6 cm roll film, one can convert the data for use in connection with large-format film such as Ektachrome Type B. Last but not least, there then come the creative applications of this technique, but it is essential, first of all, to master the technicalities in order to achieve satisfactory results.

All the photos accompanying this contribution were taken by Ulrich Hohloch, Stuttgart. He used 8×10 inch Kodak Ektachrome sheet film in his Linhof Kardan Color.

Artistic forms in nature I

"Seek, and ye shall find." This proverb should induce one to set off in search of motifs in those places where commercial photographers are less likely to be found; in the woods, on beaches, on meadows, along rivers and in the old quarters of towns. These are all areas in which Mother Nature has been busy as a creative

artist. Through the passage of years, erosion, wind, sun, fire, rain and rot—the original forms are changed and reshaped into artistic figures which remind one of some symbol or creature.

With a little practice and manipulation (e. g. darkening wood with preservative), one can cause patterns and structures to

Below:

Sulwyn Evans came across this piece of wood on a beach. Appropriate lighting brought out the structure of the "face" in the wood.

Data: Linhof Technika 70, 100 mm Xenotar, Ilford FP4. $\frac{1}{25}$ second at F16.



stand out more clearly for photography. Yet, in many cases, no form of human interference is necessary at all. Nature has been much more inventive than man. The bizarre forms are then so striking that even an unobservant person could not pass them by.

One does not have to undertake lengthy journeys to find examples which are worth while photographing. In any zoological gardens you will find abundant subjects. Even in the feathered world—as clearly demonstrated in the accompanying example by Hans Gundel—you will find any amount of suitable motifs. However, you will have to go in fairly close to get a successful shot. The format also plays a decisive role here. Anyone who really wishes to bring out the fine structure of, for example, wood grain is

advised to use at least a 4×5 inch camera, since only then will the minute details be rendered really sharp. A further important factor for satisfactory results is skillful lighting or the right amount of fill-in illumination. Buyers for such photography can be found without much difficulty in practically all branches. The actual type of subject which may be included under the general heading “artistic forms in nature” extend over several fields of applied photography. There is, as already mentioned, animal photography, general zoology, plant photography, the entire domain of photomacrography and photomicrography, crystallography etc. This list is not intended to be complete; the best advice we can give is to keep your eyes open and always carry a camera.

Below:

The coincidences encountered in nature are astonishing. Indeed. The “face” can be identified without any difficulty as that of some animal. Wood grain pattern photographed by Sulwyn Evans.





Top left:

As already shown in other illustrations, the grain of wood is admirable for creating figures or patterns. The formations in the grain, especially when the rings are of different colors, always remind the observer of something or other.

Photo: Tracy Borland, USA

Below left:

Leaves of a fan-palm.

Photo: Klaus Hackenberg, Lauffen am Neckar.

Below center:

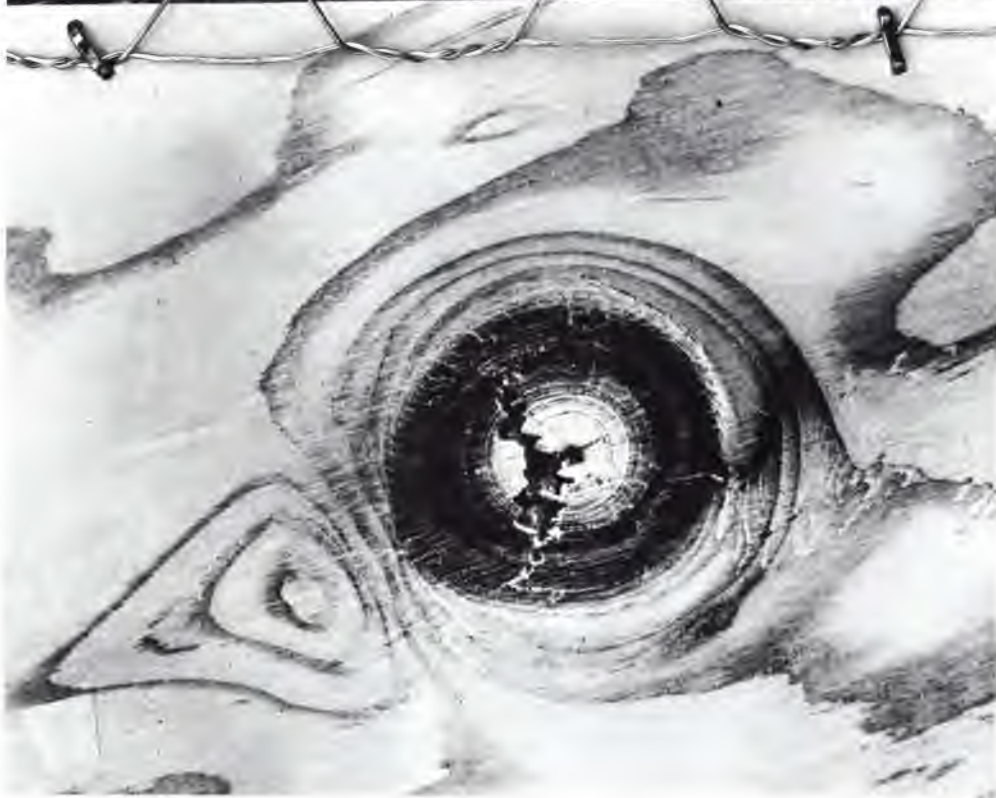
Siberian tiger. Even the marks on the head of this tiger form an interesting pattern.

Photo: Peter Frankenstein, Stuttgart.

Below right:

A fruit of bizarre shape: a bottle-gourd.

Photo: Klaus Hackenberg, Lauffen am Neckar.



THE PHOTOGRAPHER ON THE BUILDING SITE

by Harald Bischoff

The fascination of man and machine topsy-turvy, the hectic activity, the impressive interplay of highly varied working processes,—in other words, the difficult to describe atmosphere on a large construction site—has often tempted the photographer to tackle the subject.

Many photographers, however, are reluctant to take on such a task, saying that one site looks exactly like the next, entirely lacking in dynamism. Now it is not my intention to write a eulogy in praise of those photographers who, in spite

of all this, plunge into such assignments and later deliver excellent pictures. Rather, I wish to point out certain basic facts to encourage those who have never even tried.

What kind of photos are required?

The answer to this question will help one to decide what kind of equipment to take along and what kind of preparations are necessary. Is one supposed, for example, to record individual phases of a process over a certain period of time or is a general survey required to show how far work has progressed? One might, for instance, receive an assignment to demonstrate some new machine in use on the site.

In other words, if it is contract work, one must first of all find out the exact aims of the client. Once this point has been cleared up, one can go on to the next stage.

How to get the required results

There is little point in arriving on location with the car full of equipment and trying to get started with the photography immediately. It is more advisable to make initial enquiries on the site, taking a note of the equipment which will be required, the most favourable viewpoint and the correct time for each photograph. Further questions which might be asked are as follows: is the site a small or a large one? Are close-ups of detail required? Will aerial photography be necessary? Are people to be included in the scene? The most reliable answer to all these questions can be obtained on the project site during working hours. That is the right moment to obtain a general impression of the extent of the site, the lighting and conditions, where the camera will have to be set up on a tripod and, last but not least, what kind of lenses, film and lighting equipment will be necessary. If, for example, a particular concreting process is to be recorded, it is wise to watch the whole affair from beginning to end so that one knows



◀ Aerial photographs of the entire building site provide the client, contractors and other parties with an exact picture of the state of progress on the project site. Photo: Robert Weber, Ybbs an der Donau.

Page 30:

This monastery church in Neresheim was completely encased in scaffolding for renovation purposes. Photo: Ludwig Windstosser, Stuttgart.



where to stand with the camera, at which moment. The better informed one is, the more rapidly and safely the actual photography will take place at the appointed time.

Perhaps a word about the photographs themselves would be appropriate. I am of the opinion that nothing is boring which can be properly photographed. The photographs accompanying this article are evidence that interesting pictures are always possible if the photographer takes the trouble to inform himself about the constructional technicalities and works with conviction. Several different viewpoints are essential for immovable objects. Original, unusual lighting lends even the dullest object a certain interest.

It goes almost without saying that an adjustable, large-format camera should belong to the basic equipment of any photographer who intends dealing with civil engineering photography. The large negative format guarantees optimum quality of reproduction which the client expects as a matter of course in this kind of photography. In fact, certain types of shot are only really possible with an adjustable standard, e.g.

to manipulate the depth of field so that the subject is needle sharp from foreground to background. The lenses in question must have adequate coverage to permit the standard to be shifted laterally as required. There will always be trade secrets in this field as in other domains of photography, and that is what makes the experts work successful. Although little comfort for the beginner, it can be taken as a challenge to form one's own style, develop a "signature" of one's own and carry one's point with the client.

Top:

A further aerial shot taken by Robert Weber.

A step-by-step record of the construction of a large project, such as this bridge, is only possible through taking a comprehensive series of pictures from the air over a lengthy period of time.
Photo: Foto-Hauck, Mannheim.





Motor sports photography

H. Bischoff



Top:

Nürburgring: 1975 180-mile ADAC race. A difficult shot from the front with little depth of field problems.

Photo: Wilhelm Ostgathe, Sinzig. 5×7 inch Linhof Technika, Agfachrome 50 S.

Below:

Roadrace in the mountains.
Photo: Heribert Heri, Austria.



Below:

Alexander Hubrich is a well-known sports photographer of whom one can say that he occupies an exceptional position: he is not a "narrow specialist" but can cope equally well with horse racing or motor sport.



This little immediately conjures up the droning of engines, the smell of gasoline and hot rubber. In the midst of this all, the motor sport photographer feels at home. The question may well be asked there how do these sports photographers manage to get acceptable pictures in the hectic atmosphere of a race? The motor-ing journalist and photographer have one thing in common: they both possess good background knowledge about the event they are attending and this will include the following points:

1. The drivers taking part, their individual ability, for example, their driving style and previous career.
2. The racing cars—formula, type, specification and performance.
3. Course route—relative danger of each curve, start, finish, conditions of the road surface, etc.

ideal line which represents the shortest distance between the beginning and end of the curve.

Once the photographer has found such a position, he can mount the correct length of telephoto lens on his camera, check the picture section and focus. In the case of blind corners, it is useful for the photographer to have an assistant who can tell him, by means of radio or hand signals, that a particular driver is approaching and whether he will be forced tightly into the corner by a rival. In this way, a photographer can alter his tactics at the last moment and adapt himself to a new situation.

Many a dramatic shot has been taken at the summit of a hill. Fitted with a powerful tele, the tripod mounted camera is aimed from below, glancing over the hilltop, thus obtaining a worm's eye view. According to the steepness of a

Seen through a telephoto lens, the front of a car looks squat and powerful on account of the distorted perspective. Side and back views emphasize the speed of the machine, and the color of the body-work is more prominent on account of the greater area of the side.

The Munich photographer Arthur Thill has chosen motor sport as his special field, and therefore he knows exactly when and where it is worth while taking photographs. His approach is that of the action-minded camera journalist.



Armed with such information, the photographer is then in a position to select a suitable viewpoint. He will have to change his position on the track several times during a race if he has no assistant. It is not unusual for several photographers to get together and build a team which is then distributed strategically over the course so that one or two of them are bound to capture the highlights of the race. There are no hard and fast rules for determining the best stance in motor sport, but the following are a few tips for less experienced readers: the outside radius of a curve conveys a more dramatic impression of the degree of danger when the cars turn. The front wheels of the car are hard over and the rear may break into a power slide; at the apex of the curve most cars will bunch together, since every driver tries to keep to his

summit, one can expect the car to leave the road for a moment at the top. Using this technique in hot weather, most interesting reflections are possible. The photographer is lucky, indeed, if he can cover two sections of the tract from one and the same position. This depends largely on the shape of the track and usually requires an elevated viewpoint.

It goes without saying that the sports photographer must know the course like the back of his hand. A valuable tip, for amateur and professional alike, is to buy a map of the area beforehand and study the route. Such homework is likely to reveal the tricky curves in a race. The "background knowledge" must also include at least a brief study of the vehicles. Every racing car has its technical weaknesses and strong points and, very often, a "chocolate box side" for photography.

Color page right:

Top left: In the pits. Photo: Arthur Thill, Munich.

Top right: An example of how to leave the background out of focus by using full aperture. Photo: Alexander Hubrich, Mannheim.

Center: A further shot taken at the 180-mile ADAC Race 1975; the start of the touring car formula. Photo: Wilhelm Ostgathe, Sinzig, Agfachrome 50 S.

Below left: At the Nürburgring 1973: Old Timer's Race, Jochen Breiter in a Type 37 Bugatti.

Below right: German Prix 1973 at the Nürburgring, Jackie Stewart training in a Tyrrell Ford. Both photos taken by Wilhelm Ostgathe, Sinzig, Agfachrome 50 S.

Color page 34:

Photo: Schlosser, Agfa-Gevaert, Leverkusen, Agfachrome 50 S, 8x10 inch.





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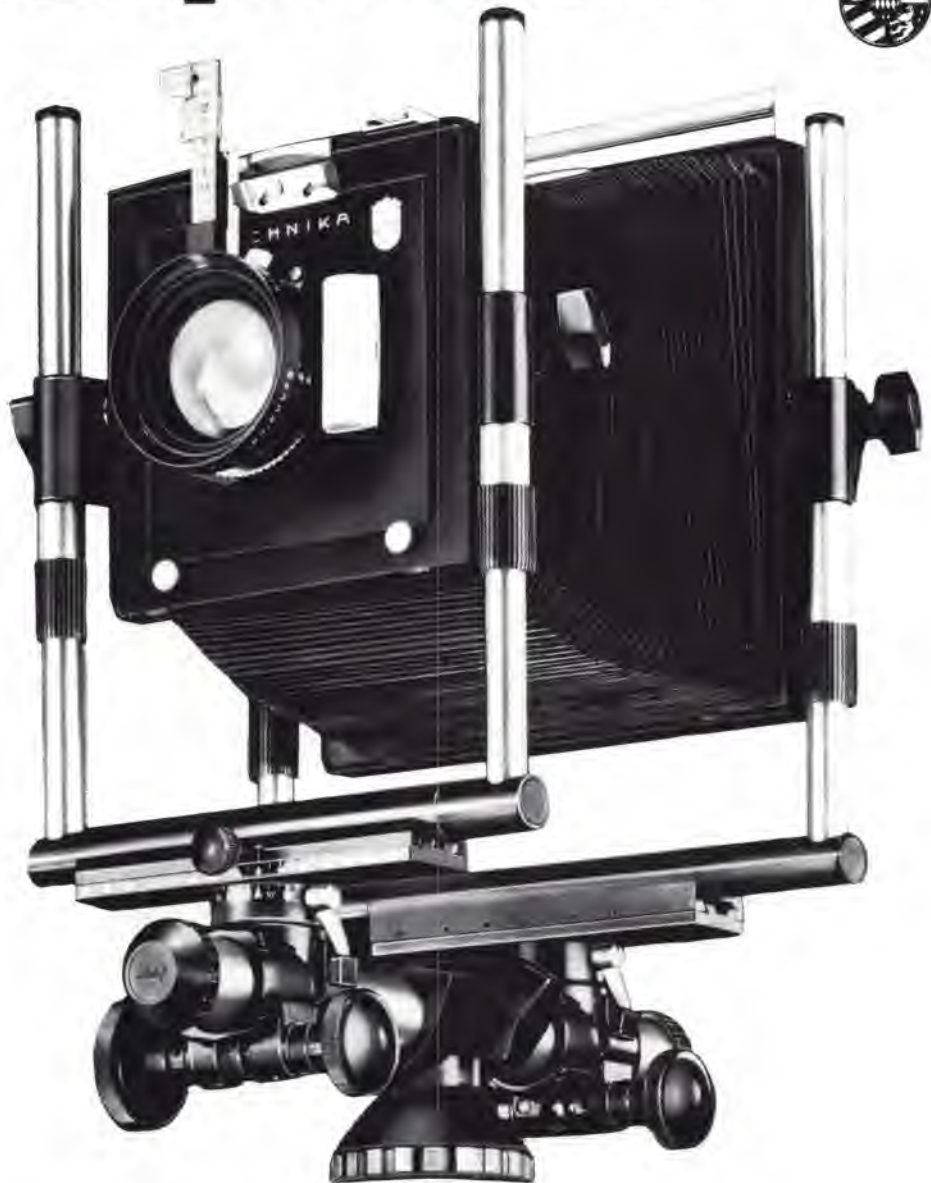
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Technical data

Length of basic monorail	12 1/2 in.
Extension of monorail to	25 in.
Lens standard:	
Total lateral shift	5 1/2 in.
Vertical rise	6 3/4 in.
Center swing around the horizontal axis	360°
Center swing around the vertical axis	360°
Rear standard:	
Total lateral shift	5 1/2 in.
Vertical rise for 4 x 5 camera	6 3/4 in.
for 5 x 7 camera	6 in.
for 8 x 10 camera	6 in.
Center swing around the horizontal axis	360°
Base tilts around the horizontal axis	100°
Center swing around the vertical axis	360°



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CALENDAR PHOTOGRAPHY

In the year 46 BC, according to our chronological system, Julius Caesar introduced the calendar which was called after him, the Julian Calendar. In fact he was born about 100 BC in Rome and fell victim to Brutus' plot in 44 BC. The purpose of the calendar was to divide up the year according to astronomical points of view. The common year was divided up into 365 days and every fourth year, i. e., in a leap year, a day is added, so that we have, in fact, an average year of 365.25 days.

Yet, the year as then calculated was still too long, so that in the course of centuries the beginning of the year shifted. With his reform (in 1582) Pope Gregory XIII eased matters through reforming the calendar. He stipulated that every 400 years three leap days were to be cancelled. The length of a year now had 365.2425 days, the remaining error now being so small that it would amount to an entire day for the first time in the year 3333. In the course of the years, all manner of calendars have been created which provide, amongst other things, information about the year, the month and the day. The variety is broad indeed and ranges from the simple "line calendar" (at the light of day one merely adds a line to a row or scores off a line from an available number of days), through calendars with tear-off proverbs or witty remarks which are intended to lighten one's day, to the artistic wall calendar which one grudges throwing away at the end of the year. For the sake of a comprehensive list, one should possibly also mention the so-called "stress barometer" in the form of an appointment calendar.

Leaving aside those calendars which are merely intended to tell you the day of the week, date, month and year, there are also calendars which have a number of other functions to fulfil. We are thinking here of the extensive categories of industrial, advertising and art calendars. In 1977, for the twenty-seventh time, a calendar show is due to take place in Stuttgart, Western Germany, organized by the Grafischen Klub Stuttgart e. V. and the Landesgewerbeamt Baden-Württemberg. It is the largest exhibition of its kind in Europe. Calendars sent in are divided into the categories "industrial and advertising calendars", "retail calendars", "Japanese calendars" and may receive the awards "good" or even "excellent". Apart from this, Kodak also organises their own calendar show in which entrants may subject their color publications to the opinion of the jury.

One thing is certain: the quality of calendars is increasing from year to year. This applies not only to the kind of picture calendars which are sold through the retail trade, and must therefore pay their way, but also to the industrial or advertising publications, although in the latter case it is obvious that many firms are keen to bolster their prestige. Some corporations hand out an assignment for a calendar and only want the

best of the best (the right models, the right accessories, perfectly presented in thrilling photography); others are prepared to think up something a little more original in order to attract attention.

The successful calendar concept calls for a clear pictorial message, new and informative contents, a short and appropriate text, a practical tear-off block for the date and technically perfect production and binding. Even those publishers who are a bit on the conservative side have been spurred by the new wave to greater performance.

Continued page 41

Color page right:

This is a composition which is intended to conjure up the impression of fall in the mind of the observer. Photo: Werner Keidel, Iserlohn.

Minolta



ALICE 1976



ovember

SONNTAG	MONTAG	DIESTAG	MITTWOCH	DONNERSTAG	FREITAG	SAMSTAG
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16

17 18
24 25





Aqueduct near Segovia

This is a masterly photograph which one could, no doubt, discuss technically at great length. In this particular case, however, we wish to avoid distracting the reader by technical data and give him, instead, the opportunity to concentrate on the motif itself. The picture was selected by a six-man jury from 4000 professional transparencies as the subject for February in the International Photo Calendar 1977. The calendar includes 13 exquisite pictures of a very high technical quality from large-format originals.

Here, the only thing that counts is ability; any mistake is immediately obvious. Many of the younger generation believe that a lack of technical know-how can be glossed over by tricks and "creative abstraction".

This Spanish aqueduct has survived since the time of Julius Caesar and it will probably still be there for many more generations to admire. Photos of this kind will survive the changing times, since they are also classical.



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6 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30



Color page left:

Calendar illustrations which Cheyco Leidmann, Munich, took for the "Sportive Agency" (clients: BMW and MBB, Munich). These photos received an award at a calendar contest.

Top series:

A few samples from the successful "Stern" advertising calendar. The remarkable feature about this calendar is the conception itself. Each photo was designed as an eye-catcher, since each picture-unit induces one to study it for more than just a moment. Photo: Kodak Public Relations.

From the many calendars which have received awards recently, one is particularly worth mentioning: the imposing BMW calendar, photographed by Cheyco Leidmann, Munich. A photographer will be able to live quite well from an assignment such as this. The photographs were taken in Corsica, Iceland and in the Sahara. The initiated will be well aware of the amount of trouble and expenditure involved in producing such a calendar.

Another interesting calendar which deserves praise is that commissioned by the magazine Stern but which we cannot reproduce for technical reasons. Further awards were given

to the following calendars: AEG Telefunken, "Fotoakzente 76", "Africa" by Haas, and "The Japanese Garden". The intention of the editor is merely to show a selection of the many beautiful and varied motifs to be found in calendars nowadays. Of course, taste remains a subjective and personal question. An important criterion in making the selection was, however, the high standard of photographic technology. For those who are interested in or concerned with the production of calendars, the German Book Trade can supply a review (price DM 14.80) of practically all the calendars on the German market at present.

THE PORTRAIT OF GRAPHIC QUALITY

"International Photo Technik" is a publication which devotes much space to all forms of advertising photography. If the thoughts written down here refer to the portrait, then there is justification for this, especially in view of the fact that it has such a wide appeal and is of general cultural interest. The following considerations can, of course, be regarded as subjective. It is the right of the established studios to propagate the color portrait and engage themselves more intensively in this business, because even since the very beginning of photographic portraiture only a very small percentage of the work produced could claim to be a graphic work of art. If we examine the earliest period of graphic portraiture, which dates back approximately to the Renaissance, we shall notice that the work was largely executed in black and white or in monochromatic colors such as sepia, red or brown-green. We should not overlook the fact that a multi-color piece of work was perfectly possible. There is insufficient space, however, here to describe the various techniques. The portraitists of the pre-photographic era showed an uncommonly fine sense of good taste in that they kept to the black-and-white or monochromatic image. Their fine sense may have been due to the following facts: in the formats common to graphic art, a high degree of abstraction was feasible and also exploited in order to portray the sitter in an engaging manner; abstraction is offered in black and white and also, to a certain extent, in monochromatic work. Color has the tendency to dominate the surrounding space; in the smaller formats this domination is lacking and the result is a hybrid effect. One must recognize and always bear these facts in mind if one is intent on creating portraits which are to be esteemed as art instead of just mass-produced products.

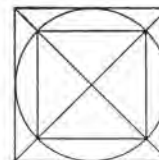
Regarding the human likeness in this light, the question soon crops up, how such a picture can be given a graphic-like quality. Even the bromoil print fails to meet such standards, since the gelatine emulsion is liable to decompose. The reader should not be astonished at the author's suggestion of how to obtain results of lasting quality, high brilliance and saturation; it is to employ intaglio printing (photogravure onto large sheets of card). Any readers interested in further information may obtain it from Ernst Giesekeing, Deckertstrasse 2, D-4813 Bethel/Bielefeld.

Once one has decided to place the portrait, intellectually as well as technically, under the heading of graphic art, then this does not necessarily mean that one is restricted to the methods peculiar to photo-graphism. On the contrary, the technique by means of which normal photographs are abstracted (e.g. tonal separation) are entirely unsuitable for the human face. They have, it is true, their justification in certain fields of advertising where an abstract effect is appropriate. This is the honest opinion of the author who is well versed in all these various abstraction techniques and was even responsible for the introduction and development of several new graphic effects. The only method which might remain usable is the conversion of a photograph via a grain duplicate negative. The choice of such a negative as a printing original should, however, be regarded as an exception and not the rule. Apart from revealing the sitter's personality and composing the picture clearly, it is the lighting which plays the major role.

Advertising photographers have reduced lighting technique to a soul-destroying perfection. There, such a matter-of-fact approach may be justified, but in the domain of personal portraits it is absolutely inhumane. Those who care to look at the portraits from the early days of photography will be shocked to see the discrepancy in density values between the print and the original. Recognition of these hard facts seems necessary at a time when serious thought should, at last, be given to a clear division between the "store snapshot" and the art photograph. Whenever such a distinction can be made, there is a chance for the genuine portrait photographer to exist economically again, who will then be able to count intellectuals, artists and cultured magnates amongst the real friends of his house. The fact that there used to be court photographers, assigned to those Houses which possessed culture and good taste is, for those who can evaluate the past properly, not merely a plain fact of interest to historians of photography. Masterful photographic portraits were to be found hanging among graphic portraits around the turn of the century. Instinct had caused them to be hung in a place where, as photo-graphic art, they seemed to belong.

Dr. Arthur Gewehr

technical news



Color negative film with improved acutance Agfacolor CNS 2 to replace CNS

Shortly after the Photokina Agfa-Gevaert introduced to the market a successor to their well-known color negative film CNS. CNS 2, as it is now known, shows greater sharpness and improved power of resolution due to alterations in the structure of the emulsion layers. A red-tinted intermediate layer, which bleaches out during development, prevents the passage of green light to the magenta layer (important for high acutance) and functions as an effective barrier against light scatter within the individual layers. In addition, the size and structure of the grain in the yellow emulsion have been formed in such a way that they also help to minimize scattered light. In effect, the yellow layer has become more transparent, and in the magenta coating the image is rendered sharper. Finally, the total thickness of the film coating has been reduced by 25%. Again this means there is less chance of light scattering between the layers. The consequence of all these measures taken together: greater potential acutance.

CNS 2 will be available in the following film sizes: Cartridges for 12, 20 and 36 exposures on 35-mm guage as well as bulk stock, 126-type cartridge for 12 or 20 exp. Rollfilm 120, 127 and 620.

The importance of color negative film can be seen from the turnover statistics for Europe in 1975: of the 305 million films which were exposed (still cameras only), 60% were color negative and 20% each were color transparency and black-and-white films. Almost 5 billion color prints were ordered in Europe in 1975.

Manufacturer: Agfa-Gevaert AG, D-5090 Leverkusen.



Arri Color Analyzer

With the instruments CA 100 and CA 300, Arnold & Richter is offering for the first time two new first class Color Analyzers for dark-room operation.

The electronics represent the latest state-of-the-art technology and only proven semiconductors, IC's and hybrid circuits are employed throughout the instrument.

The electronic components are very easy to service and mounted on quick-change plug-in boards. When selecting the components, special emphasis was placed on maximum and short term stability. The instruments are immediately ready for operation when switched on.

The same design objectives of precision, stability and rigidity were also realised consistently in the mechanical and optical areas.

Both instruments are identical in the following features:

Light detector

Selected photomultiplier for precise measurement of even the weakest light intensities.

Light probe

Light probe with fibre optics cable to multiplier. *Easily exchangeable. No mechanically moving parts.*

Automatic compensation of cosine error in range of $\pm 20^\circ$ through complex optical system. The result: at least 50% saving in time for the complete measuring process. No uncertainty in measur-

ing the selected image detail. The errors introduced by so-called "cosine correcting" probes are eliminated. Aperture 3 mm. Integral measurement by simply switching a diffuser disc in front of the enlarger lens.

Measuring instrument

Indirect, flare-free rear illumination. Scale length: 147 mm. Grade 1. Upper scale: precisely calibrated in logarithmic density from +1.0 to -1.0. Lower scale: calibrated in exposure time from 1 to 100 seconds with 10 $\times$ switch.

Memory

4 illuminated digital adjustment controls for an infinite number of memory values, *lockable*, reproducibility 0.1%.

Master control

Master control knob with 10-turn potentiometer for working *with every enlarging scale and every iris setting*; therefore no basic brightness adjustment at the enlarger lens iris.

Arnold & Richter KG, Türkenstraße 89, D-8000 München 40.

Hirsch Color Analyzer BSE 730

Apparatus for determining the filtration in color printing. The correct exposure time is stored and read off a digital display. An enlarger connected to the analyzer can be timed directly as many times as desired. The measuring



probe is fitted with three highly sensitive silicon photocells incorporating dichroic-type filters—as in modern color enlarging heads. All colors are analyzed in one step, either integrally or selectively.

The unit itself is provided with two channels each for the colors yellow, cyan and magenta, as well as one channel for black-and-white prints. This means the characteristic values for a choice of film emulsions can be stored independent of each other. Once the basic filtration has been determined empirically by means of subjectively judging test strips, the correct values are programed into each color channel for a specific exposure time. For subsequent enlargements, it is sufficient to swing the filters in and out (respectively, insert color printing filters in the filter drawer) in such a way that the exposure time remains constant for all three color channels. This means that no zero adjustment is required. The Hirsch analyzer is the first of its kind to operate according to this time-saving principle.

Manufacturer: T. Baeuerle & Söhne, Bahnhofstraße 64, D-7742 St. Georgen im Schwarzwald.

New electronic flash unit Braun 2000 Variocomputer 460 VCS

This computerized flash gun with Vario reflector and built-in wide-angle lens offers all the advantages to be expected of a top-class unit for a wide range of applications. The Vario reflector swivels in just about any direction; the flash may be triggered via an integral slave cell or via conventional sync. cord. An external sensor increases the f/number range and improve operating conditions in general. The one-piece "hammer-type" unit is rated at 105 watt/sec. (150 guide number for 100 ASA).

technical news

Rapid charging facility for NC accumulator—one hour only. Over-charge safety device. Economic Vario computer circuitry obtains up to 1800 flashes per charge (according to distance, the recycling time can also be as short as 0.3 sec.). Range up to 11.5 m/37.7 ft. The gun may be fired remotely by another unit by virtue of the integral slave cell. The removable camera bar incorporates a bayonet-type attachment. For 2¼ sq. cameras there is also an appropriate adapter. The Braun 2000 Variocomputer 460 VCS has been designed with a view to accepting the external sensor "Vario Control 2000". This camera-mounted ac-



cessory takes over the various measuring and control functions when the gun itself is detached from the camera. It also increases the normal working range of 3 f/numbers on the flash unit to 8 in all, each step being divided into ½ f/number. This means the flexibility of the 2000 Vario 460 VCS has been considerably improved.

Manufacturer: Braun AG., D-6000 Frankfurt.

Distributor: Braun North America, 55 Cambridge Parkway, Cambridge, Ma. 02142.

C 70 — The new Compact Unit from Broncolor

Bron Elektronik AG has completed their studio flash system with a small, transportable set, the compact unit C 70.



The unit with the guide number 50 (21 DIN/100 ASA) can be switched to half power. On full power the recycling time is 1.8 seconds. An UV-coated flash tube guarantees the optimum colour saturation. The 300 W Halogen modelling light is proportional to the flash also in connexion with other broncolor units. The conformity of the flash and modelling lights permits correct lighting. The synchronization takes place through the photoelectric cell, the synchronous cable or the cableless infra-red system. The complete range of reflectors and accessories of the proved universal lamphead can be used with the C 70. Quick change head, spring fastener and UV-coated flash tube have also been taken from the universal lamphead. The technical conception and the choice of components are designed for intensive use.

C 70, the small unit with large output!

Bron Elektronik AG.

Broncolor dispense with the sync. cord

For all those photographers who have cursed flash synchronizing cables as they stumbled for the tenth time, good news: Advanced electronic components in combi-



nation with the Broncolor IRS (Infra-Red Syncro) have enabled the Swiss manufacturer to replace the conventional sync. cord or radio transmitter. The flash unit is triggered by means of infra-red rays which are reflected from the walls and ceiling of the studio. The self-contained IRS transmitter is inserted into the accessory shoe of the camera and emits invisible infra-red radiation to the IR receiver plugged into the flash sync. input socket. The transmitter is powered by means of conventional dry batteries. The IRS system is not only intended for Broncolor equipment but may also be employed with most other types of generator, compact lamp heads and reporter-type flash guns. A radio transmission license is, in this case, no longer necessary.

Weight of transmitter: 70 g.

Weight of the receiver: 220 g (without battery).

The IRS receiver is also capable of reacting to flash impulses in the same manner as a conventional slave unit.

Manufacturer: Bron Elektronik AG., CH-4123 Allschwil.

Fujicolor help to make the day longer with F-II 400

The new Fujicolor F-II 400 is the most sensitive color negative film on the market. Its extremely high speed rating permits one to continue taking photos—without flash or artificial lighting—when others have packed up for the night. In spite of the extreme sensitivity for a color negative film, the F-II emulsion has still a remarkable resolving power. Most striking is the good rendition of skin tones. The generous exposure latitude, fine detail rendition in the highlights and shadows, its reliable storage qualities and the stability of the latent image enable one to favorably compare the film with the well-proven Fujicolor F-II with 100 ASA rating. The new film may also be processed with the same reliability in the CN 16 or C-41 chemistry. This means that practically all labs will accept the new Fujicolor F-II for processing.

The film is sensitized for exposure by daylight or blue flash bulbs and is packed in 35-mm cartridges for 20 or 36 exposures.

Distributor: Fuji Photo Film USA, Inc., 350 Fifth Ave., New York, N.Y. 10001.

Further additions to the Gossen range of exposure meters

Seen in Cologne: Sixtar 2 and Labocolor PM

With the introduction of their first blue silicon cell meter, Gossen have extended their palette in such a way that they now offer



exposure measuring apparatus with a selenium photo-cell, CdS cell and silicon blue cell as the light detector. Such a wide range puts the Erlangen manufacturer in a position to satisfy all manner of requirements.

The Sixtar 2 with its silicon blue cell falls into the category of the more sophisticated exposure-measuring meters. The silicon blue cell (SBC) is excellently filtered, and, on account of the short reaction time, shows the correct data very quickly. Its electronic amplifier of refined circuitry corresponds to the latest advances in this field.

It is possible to select two measuring ranges on the Sixtar 2. Range 1 covers LV from -4 to +6, and range 2 covers LV from +5 to +15.

Specification in brief:

Exposure times from 1/2000 sec. to 2 hours. f/numbers from 1 to 45

Speeds for cine cameras 4.5 to 96 fps

Film speed rating 6 to 12500 ASA

Angle of acceptance! (incidence reading) approx. 30°

Diffusing dome for light measurement

The second novelty from Gossen is the Labocolor PM which incorporates a photomultiplier as detector. This implies great sensitivity and high accuracy which



will leave the professional little to desire. Its particular advantages become most apparent in the partially-integral measurement method. The Labocolor PM is suitable for color analysis through determining the proportional color components, for measuring the exposure (giving automatic consideration to all the factors affecting exposure), for indicating filter density values as well as measurement in the field of photography.

Density values of $-80 \dots 0 \dots +80$, exposure times 1 to 156 sec. contrast values of 0 to $5\frac{1}{2} \Delta LV$ may be read directly off the display units. The field diam. taken in during a selective measurement is 6 mm, and 40 mm with the partially-integral method. The entire image area is measured when taking an integral reading.

Both these items were to be seen for the first time at the 1976 Photokina in Cologne.

Manufacturer: Gossen Meß- und Regeltechnik, D-8520 Erlangen.

Distributor: Gossen Div., Berkey Marketing Companies, Inc. 25—15 50th Street, Woodside N.Y. 11377.

Motorized remote focusing with microscope-precision

In the field of enlarging and copying it can happen that one's arm is simply not long enough to bridge the gap between the easel and the lens, which then involves either strenuous contortions or the need for an assistant. The problem is not new and therefore the solution of motor-driven remote focusing is not all that novel.

The precision, however, with which Linhof tackled this problem in their motorized 4x5 and 5x7 in. copying/enlarging cameras is worthy of attention, since making printed circuits and other true-to-scale repetitive work call for the greatest accuracy in focusing.

The motor is of the reliable precision-type commonly found in aircraft, is concealed in the guide rail of the camera and requires no maintenance. Alteration of the bellows extension is effected along a polished, ball-bearing-mounted column, and although the loading is not inconsiderable—due to the mechanics of the adjustable standard and, possibly, a heavy lens and shutter—absolute freedom from backlash has been



achieved, both as far as rotary or up-and-down movements are concerned. A safety clutch comes into play at both ends of the power-assisted, 110-mm displacement-distance, thus preventing damage to the electromechanical parts. The operator knows immediately when he has reached the limits of travel and can carry out a course adjustment by hand. Normal or creep speed of the head up and down the column is regulated by means of a control box at the end of 6½ feet of power cable. (See illustration.) The creep speed permits one to carry out a bellows extension adjustment of as little as $\frac{1}{100}$ mm. With the aid of the Reflex Photometer plus the 8X magnifier, it is perfectly possible to achieve a focusing accuracy which is comparable to that found only in a precision microscope. The remote control can be subsequently built into existing Linhof Reprocord apparatus (but not Technika or Kardan models).

Linhof Präzisions-Kamera-Werke GmbH.

Enlargements up to 32x47 in. with precise motor drive

Although it was originally developed for microfilm retrieval, the motor-driven Linhof DIN A 0 enlarger (32x47 in.) is actually a universal instrument with a high degree of operational convenience.

The backbone of this precision apparatus is the square steel column with the ball-bearing-mounted carriage which is free of backlash and fully counter-weighted and, below, the massive base casting. The enlarger head is driven by power up and down the column to produce enlargements not only from 35-mm film in aperture cards but from any negative up to 5x7 in. The distance

Linhof

One of many



LINHOF tripods are known the world over for their precision, high-quality and serviceability. Rigidity, maximum freedom from vibration or torsion are to be found in every tripod. The Record Flex, a tripod as it should be: light, firm, high and with a special feature: on releasing the top rapid-clamps, the braces glide down the legs until they reach an optimum position for working comfortably near floor level. Send for illustrated literature. We shall be glad to help you solve that problem.

Linhof

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technical news

between the negative carrier and the easel can be seen in a small window in the column and can be repeated—exact to a millimeter—at some later date. On the projection table, which can be tilted and adjusted for height, there is a special vacuum frame DIN A 0 which is connected by tube to a suction pump which creates an adequate vacuum to hold the original.

Travel of the enlarger head and focusing are controlled from a central switch box. The focusing motor can run at two speeds;



corrections of $\frac{1}{100}$ mm are perfectly possible. A timer is employed to operate the electromagnetic shutter for exposures as short as 0.2 sec. or as long as desired. The shutter is synchronized with the lamp in the head so that the "afterglow" is cut off. This is of particular importance when working with a point-source lamp (microfilm retrieval) in view of the relatively short exposure times and the tendency of such bulbs to glow "warm" for some time after the circuit has been interrupted. An opal lamp system with appropriate condensers is available for making enlargements from continuous-tone negatives.

The associated S-Planar and S-Ortho-Planar lenses guarantee maximum possible resolution (360 pairs of lines p/mm).

The DIN A 0 enlarger can also be used for precision copying work with the aid of the Linhof lightbox and suction assembly. The results are the kind of exacti-

tude to be found only in the electronics industry today.

A magnification of up to 30X is possible with the DIN A 0 enlarger. When used in two stages—copy and then enlarge—a change in scale of up to 1:900 is a reality.

Linhof Präzisions-Kamera-Werke GmbH.

New Linhof Camera for Polaroid's Large Format

At the 1976 photokina Polaroid introduced self-processing materials for a color print 8×10 in., using Linhof cameras as a means of demonstration. The 8×10 in./18×24 cm Kardan B employed on this occasion has a long and successful record behind it, especially in advertising studios where the skill of the real expert is decisive and the considerable costs involved—camera, tripod, accessories, transport, etc.—are covered.

On account of the control it offers, the new "instant" large-format film gives those persons who are less well versed in photographic technicalities, for example, commerce, art, science and technology, a chance to turn out high-quality work—provided he has an easy-to-use, reliable and inexpensive camera at his disposal. In anticipation of the new material, Linhof set to work and designed a simpler camera for this format so that the initial cost would bear a direct relationship to the frequency of use expected of such an apparatus since, after all, the non-full-time photographer is likely to use it only occasionally.

Linhof were therefore in a position to show a new, light but robust camera for this format at



the photokina, and the surprise was also the modest price quoted. It is basically derived from the proven Kardan Standard System and will be known as the Kardan Standard 18×24 cm/8×10 in.

It has all the essential perspective controls, the well-known square-section monorail with double carriages, the Kardan B snap-on spring, back for vertical or horizontal formats incorporating lift-off handle. Length of monorail 54 cm/21.2 in. height/width: 44×44 cm/17.3 in. Weight approx. 6.3 kg/13.8 lb. Apart from using the camera as mobile piece of equipment, it is also recommended in conjunction with the accessory stand for copying and for photomacrography (from 1:1 up to 42×59 cm/16.5×23.2 in.).

With this camera and the new film, it is thus possible to produce, in a matter of minutes, a high-quality 8×10 in. color paper print of machines or other large objects (perspective control!), of small technical details (e. g. printed circuits), also colored illustrations in books, drawings, etc., which might be too large to pass through a photostat machine, damaged parts in engineering insurance, and so on. Thanks to the fact that one can see the results immediately, and take a second or even third shot on the spot, it is possible to correct any errors in exposure, illumination, perspective or depth of field—before it is too late.

Linhof Präzisions-Kamera-Werke GmbH.

The Complete Series of Cinematic Tripod Heads

Since the Linhof Cinematic tripod head came on the market, the amateur movie-maker has likewise been given the opportunity to carry out that perfect, jerk-free panning he has often admired on television or in the cinema. The panoramic cylinder of the Cinematic is based on the fact that one can vary the drag of a fluid, i. e. the resistance offered to the panning movement. The vertical movement is carried out, as previously, by means of the proven Precision Panhead which is designed for onehand operation. In order to accommodate those cameras, however, which are fitted with non-conventional controls, Linhof can also offer a version of the Amateur Panhead incorpo-



rating an adjustable panning handle and mounted on the Cinematic cylinder.

The very latest model of the Cinematic now carries the Precision Panhead with compensating spring. This device takes care of the pull of gravity when panning in a vertical direction, enabling one to guide the camera more precisely.

For professional applications in the fields of motion-picture photography, video and television, Linhof have designed the omnidirectional fluid head Cinematic II.

Linhof Präzisions-Kamera-Werke GmbH.

Polaroid Film Holder for 5×7 in. Cameras

Those photographers who have got into the habit of taking a Polaroid shot beforehand in order to check the exposure, etc., can



now employ this technique even with a 5×7 in. camera. Linhof will be in a position to supply once again, the necessary intermediate adaptors (see illustration) from December 1976 onwards. The well-known 4×5 in. cassette serves as a holder for the Polaroid film, which means that a considerable area of the 5×7 in. format is taken in. There is no need to refocus, since the Polaroid and ground-glass planes are identical.

Linhof Präzisions-Kamera-Werke GmbH, Rupert-Mayer-Str. 45, D-8000 München 70.

Distributor: H. P. Marketing Corp., 98 Commerce Road, Cedar Grove, N.J. 07009, USA.



Metz Mecablitz 45 CT 1

This powerful, one-piece professional flash unit is characterized by the latest electronic circuitry, versatility and ease of operation. It is possible to exploit every aspect of flash photography—even special techniques—with this new Metz unit plus the external sensor. The high light output—147 for 100 ASA film—enables one to work with the Telecomputer throughout a wider-than-average range of 0.5 to 15 m/1.64 to 49 ft. The five-aperture Telecomputer (for 100 ASA film; f 2.8, f 4, f 5.6, f 8, f 11), incorporating energy-saving thyristor circuitry, ensures that each picture receives the exact amount of exposure required. The recycling time can be as short as 0.3 sec. when working close up, and this means hundreds of flashes from one battery charge.

The swiveling Quadrolight reflector permits one to employ all manner of indirect, soft lighting, since it pivots 360° around the horizontal axis and 90° upwards. Irrespective of the position of the reflector, the sensor always remains pointing at the subject. This means that even when the flash is bounced from an umbrella-type reflector behind the unit, the exposure is calculated automatically.

The power supply may be selected as desired. The NC accumulator pack in the "handle" may be exchanged for a set of 6 alkali manganese dry batteries. The former may then be charged within four hours—either externally or in the flash gun.

Manufacturer: Metz, Postfach 84, D-8510 Fürth, Metz EPOI, 623 Stewart Ave., Garden City, N.Y. 11530.

Minolta XE-5

Around Photokina time the new Minolta SLR camera, the XE-5, was also introduced to the European market. The XE-5 is a "system" camera for 35-mm film with fully automatic exposure control, stepless electronic timing of the metal focal plane shutter (Copal-Leitz System). The basic specification of the XE-5 is similar to the well-known XE-1. The idea behind the new model was to offer the essential computer-controlled facilities of the XE-1 at a more favorable price so one dispensed with a number of refinements. Naturally, all the lenses (also some of the special Leitz lenses) and the entire range of accessories fit the XE-5.



Distributor: Minolta Corp., 101 Williams Drive, Ramsey, N.J. 07446

Osram SL 1000 now with blower

Following up their success with the safety lamp SL 1000, Osram have now introduced a version for continuous operation: the SLG 1000 with fan cooling. This lamp for motion-picture and general photography even improves on the high safety factor to be found in the SL 1000. The fan may be left running whilst the light is switched on and off as required.

The technical specification and construction correspond to the strict stipulations laid down by the German safety authorities (e.g. VDE). A thermostat switches off the lamp in event of overheating. A cage incorporating a parabolic safety lens protects the "Superphot" 1000-W halogen lamp and also the reflector. The use of a low-voltage motor enabled the designers to keep the size of the housing as compact as the SL 1000.

Manufacturer: Osram GmbH., Hellabrunner Str. 1, D-8000 München 90.

LINHOF

tripods for the photographer who demands the finest equipment available. Made to the well-known LINHOF quality standards, their excellent reputation is based on superb construction, maximum precision, advanced design and exquisite finish. LINHOF does not compromise when quality is concerned—superior materials and precision engineering are the reasons behind the proven reliability of the LINHOF tripod range.

LINHOF tripods meet the specific needs of professional photographers and advanced amateurs. Their top quality features include solid all-metal construction, instant leg clamps, hard anodized leg sections and many other advanced engineering details.

Sturdy one-piece all-metal leg mount collar guarantees vibration-free camera operation.

LINHOF Precision Tripod Heads, the ideal complement for any tripod.

Reversible centerpost, with dual-thread quick-change plate, for mounting camera close to the ground.

Rapid-lock clamping levers for firm lock at any extension.

Hard-anodized hydro-aluminum alloy profiles, rugged and corrosion-resistant.

Convertible leg tips—metal spikes or rubber pads for secure footing on any surface.

Linhof

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Polaroid EE 100 Land camera



Polaroid's latest EE folding camera can accept five different types of "instant" film for color and black-and-white photography. The EE 100 is the smallest and lightest of the folding series with electronic control which Polaroid have introduced so far. It is fitted with an electronically-timed shutter, a sharp 3-element lens of plastic, a tripod bush, an adjustable carrying strap and robust, sensibly-arranged controls which make operation of the camera so simple. When the camera is snapped open, the flash diffuser slides into place in front of the built-in electronic flash unit. To make an exposure, one merely has to set the distance, view the scene through the finder and release the shutter.

Polaroid Corp.

Polaroid Miniportrait Land camera model 402

The new Polaroid "Miniportrait" camera is an improved version for the commercial photographer who is interested in taking high-quality passport photos for many years to come. Four, three-element lenses are incorporated in a robust aluminium housing. An anatomical handgrip with safety strap and professional tripod mount are the most obvious features. The shutter speeds on the 402 are $1/60$ and



$1/125$ sec. and "B" for time exposures. Provision for electronic flash synchronization.

Two parallax marks can be seen reflected in the viewfinder which are useful when the shooting distance closes to 6 ft.

Polaroid Corp., 730 Main Street, Cambridge, Ma. 02139.

Rolleimat Universal

An enlarging system for black-and-white and color printing. Handles all negative formats from Pocket to 6×7 cm. The lenses have been selected from the Rollei EL Series. The lamp head may be swung in order to project against the wall for giant-size enlargements.



Further information: Rollei of America, Inc. 100 Lehigh Dr., Fairfield, N. J. 07006.

Rolleiflex SL 2000

Prototype of a novel 35-mm SLR camera with integrated motor drive

Apart from the built-in motor drive the camera boasts interchangeable magazines, a dual finder system and automatic features especially developed by Rollei for this camera.

The motor

Film advance, shutter cocking and return mirror are all driven entirely by the motor. There is no provision for manual operation. Up to four frames per second can be pulled through the camera.

The interchangeable magazines

Conventional cartridges for up to 36 exposures on 35-mm film are accommodated. The battery compartment is incorporated in the magazine.



The dual viewfinder system

This permits the most convenient form of picture viewing under various conditions. An upright, laterally reversed image can be seen on looking through the finder hood on the top of the housing. Focusing is effected by means of oblique split image and annular micropism. Various viewing screens may be fitted by Rollei service agents instead of the standard one. A telescopic viewer is employed for eye-level shooting, once again via the focusing screen. The image is not deflected by conventional prism but by means of a mirror-and-lens system. Provision for defective vision. Provided the finder hood is closed, any stray light which may still enter through the eyepiece from the rear is compensated for during exposure measurement. In the finder, 8 LEDs inform one about the aperture and 16 LEDs have been allocated to the exposure function-range from $1/2000$ sec. to 16 sec.

Further information: Rollei of America, Inc. 100 Lehigh Dr., Fairfield, N.J. 07006.

Yashica FR

The Yashica FR is a 35-mm SLR camera in which mechanical components have been replaced to a large extent by electronic circuitry. An electromagnetic release (with soft travel of only 1 mm) helps one to cut down on shots spoilt by camera shake, even at the lower shutter speeds. There is also provision to attach a cable release or remote release device on the rear of the camera. The FR viewfinder is arranged as a kind of "information center" from which the following

data can be read: initial aperture of the lens mounted and the actual working f/number; exposure time set via pointer, metering with indication of over/underexposure by means of LED display. Focusing via ground-glass screen incorporating oblique split image and annular micropism. It has twin CdS cells which control through-the-lens averaging metering and couple to ASA film speed rating. It is possible to choose between the "aperture-priority" system or the "shutter-speed-priority" method. The Yashica FR is fitted with the Contax/Yashica bayonet which means that lenses from the Yashica ML Series as well as the Carl Zeiss T* may be mounted. The wide throat of the bayonet will simplify matters when designing modern high-speed lens systems.

The construction of the focal plane shutter is similar to that of the Contax RTS (Sugaya shutter). Both blinds are independently hung, are regulated by electro-magnets and run horizontal. This arrangement dispenses with the



time-lag of the first blind. The result of this innovation, and the replacement of mechanical governors by electronic components, is that the width of the slit over the entire picture area corresponds more accurately now to the actual shutter speed set. Preference was deliberately given to these features, but it does mean a flash synchronization time of $1/60$ sec. To reduce vibration to an absolute minimum, the shutter and mirror assemblies have been provided with pneumatic shock absorbers. The back of the camera is easily removed by simply pressing in the hinge.

Provision for attaching a motor drive is integrated in the baseplate of the Yashica FR. Without any additional operations on the part of the user, the film advance and shutter release are synchronized at all speeds.

Distributor: Yashica Inc., 50-17 Queen's Blvd., Woodside, N.Y. 11377.

Basilica in Vézelay (France).
Photo: Candelier-Brumaire.



GBT Photo Contest 1976—the results

In the spring of 1976 the publishers of this magazine ran a photo contest the aim of which was to close ties with its readers.

Although first-class pictures, which have been sent in by professionals are, indeed, published in each edition, it is not very often that readers of the journal make use of the possibility of having their work presented on these pages. A small number of "serious" amateurs occasionally send us, rather apologetically, a few of the best shots from their collection. Should some of the pictures come up to our standards as far as technical execution and subject treatment are concerned, we are more than willing to publish them—usually in color—in INTERNATIONAL PHOTO TECHNIK. And it is not all that difficult to shoot good pictures. What you need is an eye for the "photogenic" motif, a knowledge of the necessary technical fundamentals—and these are not hard to acquire—and then the ability to stand up to objective criticism.

We need hardly mention that there is money to be earned through the sale of good photos. It is through publication of their particular skill in INTERNATIONAL PHOTO TECHNIK that quite a number of unknown photographers have not only earned a nice fee but also made a breakthrough and subsequently a name for themselves.

The competition is closed. The names of the winners are to be found at the end of this message. If you are not amongst the lucky, then do, please, accept the above remarks at least as encouragement. Select a subject from the field of applied photography and tackle it like a pro. You can learn how to do this from the technical books published by Verlag Grossbild Technik. Details are also contained in most editions of IPT. Now we are not trying to do a bit of advertising on the sly for a number of new titles, although it may look like it. The facts remain, however, that apart from the above hint, many professionals have these books at their disposal although they are familiar with most of the tricks.

With the contest still fresh in our minds, we know only too well what happens when one just snaps away without

giving due thought to the subject treatment: for every good picture we had to look through an awful lot of very poor material.

For this contest we chose the subjects: "the nude", "the advertising photograph" and "the creative photograph". Most of the entries were for the categories "nude" and "the creative photograph". The Editor is particularly aware of the difficulties inherent in photography of the nude. Yet, when the "subject material" itself is "not in order", how can one make anything of such a photograph? In the case of the category "the creative photograph" it was often the lack of a properly trained eye which let the motif down. Here it is solely a matter of the creative design work within the overall composition of the photograph and not, as some thought, dependent on subtle tricks, experimental gimmicks, etc., the results of which are usually subject to chance anyhow. Fortunately, such mishaps were not all too frequent, and it would appear that the readers of this magazine show sound judgement in their attitude to photography.

Take sufficient time to plan your pictures properly. After all, the exposure itself only lasts around $\frac{1}{125}$ sec. It is not our intention to recommend, at the present point, the exclusive use of a view camera or medium-format SLR, but those who have the chance to observe and critically control the image on a large focusing screen will know what we mean by exact adjustment, focusing and cropping. The only recommendation we would like to make is to suggest to other readers, who have not had such an experience, to take a glance at the image on a large ground glass screen. Many a shot would have been more successful if the subject had been more clearly visible. So do not forget to be critical and train your eye.

This is therefore an invitation to send us a good series taken of an interesting subject, if possible transparencies not smaller than $1\frac{3}{4} \times 2\frac{1}{4}$ inch. If they are also technically perfect, they stand a good chance of being published.

One might therefore say that the contest is still open to you. The "prizes" are our usual fees and the publicity attached.



1st prize
Linhof 220 RS



2nd prize
Linhof Kardan-Standard



3rd prize
Linhof Repro-Set



4th prize
Linhof Rekord-Tripod



5th prize
Linhof Universal-Tripod



6th prize: W. Vonbank, Austria



7th prize: G. Beck, Germany



8th prize: W. Winandy, Belgium

The jury:

Dr. Gareis, Agfa-Gevaert/Technikum; Hildrun Karpf, Nikolaus Karpf, Messrs. Linhof; Dr. Mulzer, Solicitor

Prizes 6—25:

20 films each, spent by the Messrs. Agfa-Gevaert/Leverkusen; Fuji/Düsseldorf; Kodak/Stuttgart

Prizes 26—50:

One Photobook each, spent by the Publishers Grossbild-Technik

Color page 53:

1st prize: A. Hönig, Germany

Color page 54:

2nd prize: J. Dawans, Belgium

Color page 55:

3rd prize: Dr. Franco Bettini, Italy

Color page 56:

4th prize: Andris Apse Ltd., Newsealand

Black-and-white page 52:

9th prize: K. Fabricius, Germany

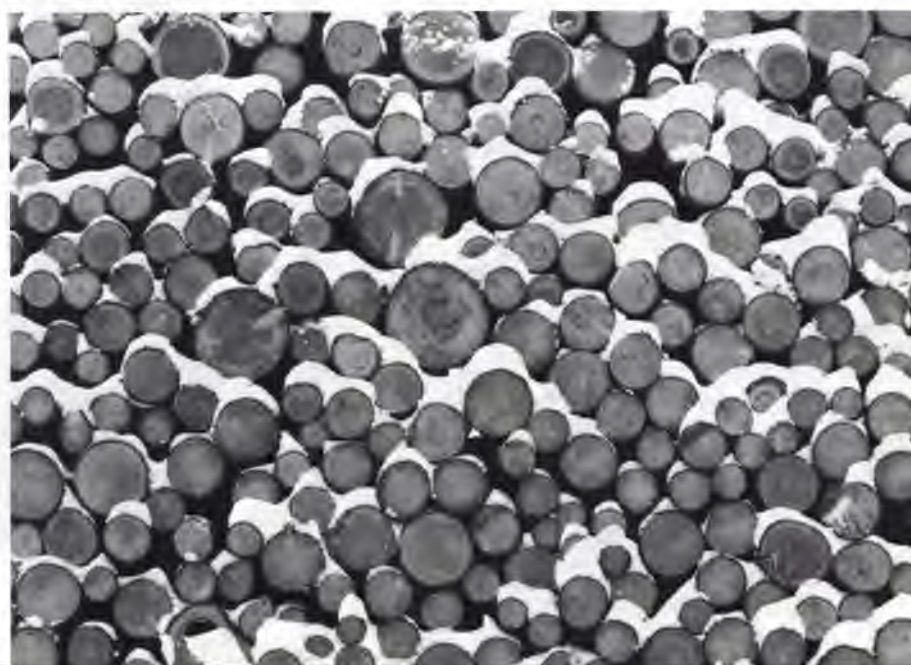


5th prize: M. Bron, Switzerland

10th prize: H. Brunnert, Germany



11th prize: H. Durand, Canada











The still-life has always been one of the "classical" subjects in photography. In the contest "The Creative Photograph", the jury awarded the third prize to these two pictures. The photographer in question, Dr. Franco Bettini of Italy, is probably not known to many readers in the English or German-speaking world. His work, however, comes up to a highly professional standard. The author probably drew his inspiration from some Old Master. The comparison with the manipulated version—for which the author employed

the not-so-new method of linen-structure paper—lends the subject additional charm. It is also interesting to study the different development of the two photographs.

The photo on the next page was sent in by Andris Apse Ltd., New Zealand, and was judged in the "Advertising Photography" category of the contest. It also attracted the jury's attention in the category "The Creative Photograph".





Photography and art

by Peter von Waldthausen

The camera has often been branded as "soulless" and its product, photographs, as an "impersonal duplication of nature". Speaking about a work of art, Hans Arp once said, "the effect which it brings about is dependent, to a large extent, on the point of view which the observer has already formed of the character and purpose of the work and is much more an expression of the mental caliber of the viewing public than a value judgement of the work itself." This sector of public awareness is, however, in a desolate condition. Although one might be permitted to call large areas of the art world as "arable land", in the case of photography it would be more accurate to speak of a forest with occasional clearings and even the origin of the latter is due to coincidence rather than intentional planning. In spite of the world's dependence on photography, there can be no more than one hundred experts who have really come to terms with the medium. The point of these deliberations is to look into the causes of a state of affairs which have lead to an erroneous estimation of the medium and to a remarkable dearth of information on the subject. The ingress of photography into art, on account of the common medium, a fact which has never been fully investigated, has had lasting effects on both. To quote Juliana Roh on the subject: "The impotence of art to establish a direct relationship to reality is ascribed to the advent of photography. It has been singled out as a scapegoat and made responsible for a crisis in the art world, and we are obliged to accept Pop Art as an expression of this. With defiant élan one was suddenly prepared to acknowledge a form of sub-culture."

It is, of course, difficult today to imagine the thoughts which must have passed through the minds of contemporary photographers 150 years ago. It is a known fact, however, that artists, in their role as skilled craftsmen, were fully integrated in society. The level of admiration shown by patrons in an artist's work was directly geared to the latter's

ability, more specifically, was dependent on how closely the portrait resembled the sitter. They were artists through the sheer fact that the average mortal did not possess their gifts. The manual aspects of the craft could be learnt, as is the case in photography today. The moment the color composition (e.g. van Gogh) or the composition itself exceeded the comprehension of the general public, the picture was simply judged as poor. The events following the appearance of Rembrandt's "The Night Watchman" are only understandable today in this context. The painting was presented to the public in 1642, the first historical book on art was not published until 1755, a seat of learning was not established until much later (1813 in Göttingen), thus only a relatively short time before the invention of photography. Prior to this, an appreciation of art, whatever that meant at the time, was guided by the need to reproduce nature as closely as possible. No matter how the artist went about his work, one wanted to be recognized afterwards in the portrait. The persistence of such archetype-motivation, with regard to pictorial art, was so strong that it finally ended in the appearance of academism (hence fifty years after 1839) in the leading art capital, Paris, where the terms "salon" and "art criticism" first came into vogue in 1725. The age had also arrived in which paintings were no longer executed solely to order but a few artists began to look round for buyers of finished pictures.

From such justifiable longings for a faithful reproduction of nature sprung the desire to "fix" the image created by the camera obscura which had long since been recognized as precise. Endeavors in this direction finally led to the form of photography which we nowadays call silver halide process. (As early as 1837 Niepce had produced his asphalt pictures.) With the dawning of the new medium in art, and hence in society, began a process in which the history of art—at that time still in its infancy—has never been able to come to an opinion free of prejudice. It was not

capable, namely, of according a due and fitting position to photography at the outset, possibly because the artists themselves were divided on the subject. For the opponents the exact reproduction of nature became henceforth a sign of an unartistic representation of the subject—thus similar to the situation in photography which was given a bad name into the bargain. The formal principles of pictorial composition were not looked for in photography nor were they indeed observed. The sole criterion respected was the refractive property of lenses. A faculty of common importance to the artists and the photographer alike, the eye, was deliberately disregarded; one spoke of the "enervating hand of the artist" and claimed it alone was capable of creating a work of art. Manual skills took preference over the mental aspects and not without victims, as we shall see later.

At that time the entire world of science and technology took a sudden interest in photography. The chemical engineers improved the various processes, the physicists calculated and designed achromats, aplanats and finally astigmatic lens systems. Soon, the maximum possible fidelity of rendition was achieved. Of course, the painters also availed themselves of the new medium. Within a decade the painters of miniatures had vanished from the scene, and later the portraitist in oil did not fare much better, since the public had discovered its fancy for the new, fashionable photography which was reputed to exhibit such a striking likeness of the sitter. Photographs were also cheaper and they found a ready market amongst the up-and-coming bourgeoisie.

However, Kings and his courtiers were also to be seen visiting the photographer's. Only the landscape painter (impressionism) and the conservative wing of the historical painters (academism) remained over from the former artists' society. In contrast to the omni-potent photography there now arose the Bohemian cult, a species of artist who stood somewhat outside the accepted boundaries of, and were little understood by,

contemporary society. His works had to be explained to the average mortal in the hopes that the artist himself would achieve immortality. The artist's former position was filled by the photographer. Historians of art were not slow to recognize their future role. Only they were in a position to interpret the meaning and significance of a particular work created by an ambitious artist who insisted on following his own instincts; they alone were able to sell it. No matter what the gallery owners cared to exhibit, there would be no art if it were not for the art critics. (Witness the experience of Durand Ruel.) In addition to these facts from the most recent eras of art history and the possibility to copy and print paintings inaccessible to the public for purposes of study (Autotype process 1882) there were also the skills of interpretation and analysis. In this connection it is fortunate that we can quote from Kurt Kusenbergs: "Pictures tell a story and explain themselves. All those finer points which an observer claims to extract from a painting are entirely his own affair."

The extraordinary position of the painter in our society, for which the photographer may be made responsible, is also the reason which induced the same author to write the following lines: "All genuine artists are obsessed with their craft; they conduct a perpetual dialogue with art, but forget to communicate with their environment. They no longer have any time for it." The 92-year-old, famous photographer Imogen Cunningham expressed the problem facing the artist in profane terms: "It is a matter of making yourself noticeable." This also aptly describes the task confronting the post-photography painter: he had to create something which differed from the much admired photography, and the difference had to be apparent to everyone. Color alone was not sufficient for this purpose, since the reality of photography permitted the observer to remember and "add" color to the new medium in his mind's eye. If one examines Gustave Courbet's picture "The Painter's Studio" executed in 1855, it is easy to imagine that such surroundings must have been an attraction for men of leisure who might care to glance over the artist's shoulder and admire his skill. It is more likely, however, that such a visit would give rise to questions which would leave the artist in no doubt that Dick, Tom and Harry were unlikely to become his clients. And since the Bohemians obtained the impression that their company was not much in demand,

they more or less cut themselves off from society. Bazille's studio (1870) showed only colleagues in such an environment.

This process dragged on for many decades and reached its nadir under the Nazis who branded their work as "degenerate art". Hans Arp was probably too optimistic when he wrote in 1925: "In recent years there has been a revaluation of the expressive manual skills: pottery, lithography, etching and silk-screen printing. All these art forms, which are less expensive and yet equally authentic in their pictorial message, will increasingly assume the former role of painting. Soon the works on offer will no longer be adequate to satisfy the demand, and artistic education as well as artistic judgement will no longer be the privileges of a few but will be available to all." He was a surrealist, indeed, and not only from the art historian's point of view! The more successful photography is in taking over a field to which it had a right anyhow, namely, the permanent recording of visual impressions as faithfully as possible, the more often will the painter be obliged to look round for new means of communication. Anyone who claims that a work of art is a "whole entity" but that a photograph is a "section from reality", is missing the point; the painter also decides which section from reality to select—provided his work is not entirely abstract.

No artist—apart from the photographer—is, for example, in a position to capture several short events at the same time. This is undoubtedly an enrichment of any creative endeavor. But in the course of time the photographer also took a knocking. A bare 23 years after the invention of photography, and with the roles already allocated, legal proceedings were instituted to determine whether photography was art or not. After passing through three courts of instance, the jurors decided that it was. From that day, photographs were granted the same copyright protection as other works of art. The Federal Republic of Germany was the first country to provide that after a lapse of only 25 years publishers should have access, free of charge, to works of successful photographers. Moreover, the artists and the academicians found it hard to forget that photography is the production of a picture without the aid of an artist. (How else would Daguerre have been able to take out a patent on the process?)

Painting, lithography, etc., staggered from one "-ism" to the next the compre-

hension of which was reserved for only a few initiated. The others simply believed, bought and collected. A Picasso on the wall became a status symbol; yet this name might well stand for many others whose works were acquired, often with little understanding of the artist's intention. The products of those artists who were active in the post-photography era, e. g., the impressionists, the expressionists and so on, have all found owners long ago and, if paintings do change hands, then only for a matter of millions. The latest mannerisms have come a few steps closer to reality: neo-realism, photo-realism, magic, critical realism, concrete art, etc. In recent times a number of pictorial artists have availed themselves of the photographic medium, and strange are the results, indeed. After the medium had been strictly taboo for all artists for over a century—there is nothing so difficult about it anyway, except for loading the film—the most commonplace subject is now good enough to be documented by them. Yet, those who had denied themselves the study of the history of photography and were unaware of their own artistic destiny found themselves on well-worn paths and—a little bird told me—that is not the essence of art. For the sake of simplicity, one merely ignores the fact that one is copying the work of people who have not studied art. This is quite fair such "artists" say, should they be caught out, and the art critics back them up. "Anti-photography" is what the efforts of these art students is labelled. Creative-minded photographers tend to regard the results as rather amusing, but quite lacking in meaning both formally and as far as the contents are concerned. Also, the technical execution is such that these works are hardly likely to "increase in value" over the years. It is almost as if they believe that evidence in their photographs of any skill obviously acquired by learning would diminish their value. They snap away like an amateur and are only influenced by the facts as laid down in the history of art—where they will, of course, find nothing to read about the taboo photography.

An amateur photographer Van Deren Coke, who went on to study art, once revealed his experiences in this respect. He would shoot a subject and then discover that the results supplied by the camera were disappointing. Here one encounters the old superstition that the "work", "the creation of the picture", is effected by the lens and film.

Rolleiflex SLX

It was the star of the 1974 Photokina, but even in 1972 a few initiated journalists knew that it existed: the new "super" camera from Rollei which was claimed to be the only one in the medium format which offered a standard of convenience only to be found in the most expensive 35 mm cameras. It was not intended to carry out a test on the model which the manufacturer put at our disposal, since the editor of IPT does not think too highly of the typical "test" carried out by certain photographic magazines. In order to thoroughly test an apparatus one must use it in the field for a lengthy period of time, must put it through its paces under a wide variety of working conditions. With the Rolleiflex SLX which we received we were only meant to gather a general impression of its capabilities.



What we had at our disposal, unfortunately, was a rather "naked" camera consisting of the housing with normal lens and a simple folding hood—and nothing else. With such minimum equipment, it was not possible, as already mentioned, to carry out an extensive test of the system.

The first impression on unpacking the camera is one of awe. We have all heard so much about the new Rollei that one tends to expect a miracle. Having recovered from the first excitement and got down to brass tacks, we here amazed with what ease complicated camera functions seemed to have been solved. We were almost a little sceptical about trusting its automatic mechanism—until we saw the results of the first test film. The results were, however, so convincing that we were more than prepared to overlook any minor shortcomings which this otherwise perfect camera may have. It was a delight to play with and one film after another shot through the camera. One is, above all, very tempted to demonstrate all the tricks this camera can perform which others cannot—and without any form of auxiliary apparatus. For example, it can measure the exposure correctly under all conditions, carry out electronically those functions—such as film transport, shutter cocking, etc.—which were previously the task of moving mechanical parts and, what is most interesting of all, it relieves one of thinking about technicalities. The result is the photographer can concentrate on the creative aspects of his picture, knowing that the electronics will take care of everything else.

The Rolleiflex SLX is a camera of genuine professional caliber which will make no errors, even in the hands of an amateur. You can handle it just like an "Instamatic" if you please. The comparison does not go very far, however, because the price demanded by Rollei will soon sober you up. As soon as we had gathered—from the rather long-winded operating instructions—how to hold the camera and use it, the actual work from setting "A = automatic" onwards is really child's play. The kind of film and speed rating is the only other setting required.

Closer examination of the rapid-change magazine soon dispersed any lack of confidence we may have had. Once removed from the housing, we noticed it was made of plastic and hence very light, but its amazing simplicity and practical design are worth mentioning. It is only necessary to reverse the magazine when reloading (you need not change the spool from one side to the other), which is a rather strange feeling at first. We were all caught, at some time or another, changing the spool over! But that is not the only surprise the camera has in store: as soon as the arrow on the film leader has been brought opposite the triangular mark on the magazine, the camera back closed and the shutter release pressed, the camera transports the film automatically to the first frame. After the last exposure, the motor likewise rolls the film up neatly onto the take-up spool. A further plus point for the camera are twin release buttons on both sides of the camera, so that left or right-hand operation is possible as desired.

If you are scared of so much automation, it is always possible to switch over to "manual". All that is required is to move a small switch, and conventional photography is yours. But what is the point of this? It is rather like buying a Range Rover and going shopping in the city center with it.

Taken all round, the strong point of the SLX is, doubtlessly, its motor drive. One can shoot series with it faster than with practically any other medium-format camera. There is, however, a drawback: using 120 roll film, the last exposure has

gone just when you are getting warmed up. Even the 220 length of roll film does not increase the scope all that much. We feel 70 mm perforated film is required here, but there is unlikely to be such a magazine in the near future. To return to the example from the automotive field: it is rather like a racing car with a two-gallon tank. In spite of the above, it is possible to shoot action photography of any kind and be certain that no differences in exposure will occur in the series. Provided a suitable exposure time is selected, nothing is lost. This is of importance, particularly in sport photography. The automatic conto still permits you to compose and be creative, e.g., manipulate the depth of focus as you want, switch to individual frame or series, etc.

The power of resolution of the lens is unusually high; the designers were certainly right in deciding on Zeiss lenses. The individual electronic functions all behave as they should. Only, we find it hard to believe that the battery has sufficient capacity for the claimed 800 exposures. We unfortunately did not have an opportunity to put this claim to the test. At any rate, 20 films were handled perfectly whilst the camera was at our disposal. Then it was time to try out the charging facility, anyhow. The following points we feel are worth improving:

- The viewfinder hood is rather primitive for a camera in this price category.
- It is rather a tricky business to coax the magnifier out of the housing; it jammed sometimes and had to be assisted.

- Focussing for those people who wear glasses is rather awkward. Perhaps a different focussing screen would be the solution here.
- The flash and/or accessory shoe is unfavorably placed. Fingers were also sometimes hurt. Attempts to fit flash units of various widths were not always successful; the main trouble is the eyelet for the carrying strap.
- The shoulder strap is not worthy of such a camera. There are now carrying straps on the market (such as the "Caddy") which enable one to carry any camera with ease. Does it have to be such a thin plastic band?
- The weight of the camera becomes a nuisance after a time. However, the many advantages packed into this camera make it worthwhile carrying a little extra weight.
- The housing at the rear closes nice and tightly, but there is no way of being certain that this is the case, since no "click" is to be heard. It is probably a matter of getting used to it.

In the short period we used the camera, no other defects or shortcomings were noticed. It is difficult to make any forecast as to how reliable the individual functions will still be after a period of several years. The future will show whether the potential buyer can recognize the advantages of such an advanced camera—and then know how to use it. Great numbers of this model will not be produced in the near future, anyhow.

D. N.



November
November
Novembre

Mo Monday		7	14	21	28
Di Tuesday	1	8	15	22	29
Mi Wednesday	2	9	16	23	30
Do Thursday	3	10	17	24	
Fr Friday	4	11	18	25	
Sa Saturday	5	12	19	26	
So Sunday	6	13	20	27	

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WHAT MEANS PHOTO-ANALYSIS?

Photo-analysis for the demonstration of products and product qualities

The task of photo-analysis is firstly the creation of picture material for proving purposes in research, and secondly the demonstration of industrial products and their qualities for information, propagation, and publicity work.

The great interest shown, especially in the second topic of photo-analysis, induces me to explain further details of tests, aims, and procedures of such demonstrations of product qualities.

The tendency of industry to give information about the value of their products and the outstanding performances of their creations is turning more and more to a demonstration of product advantages through objectively taken photographs. As a rule, it appears to be insufficient to only give a graph or an effective general photo in order to convince.

Picture 1 shall serve as an example.

Great efforts are being undertaken by the chemical industry in their plastic sections to open up new fields of utilisation for their products. In this connection petrol tanks for motor-cars are not anymore manufactured from metals only, but also from plastics. Plastics are showing advantages as against metals because they are lighter, they can be moulded easier, and their elasticity is greater. The greater elasticity of the plastic petrol tank paired with the greater stability against thrust was to be exposed. No plan how to solve this problem was available. The firm which orders the Institute to make such a photo-analysis, as a rule, provides some finished products, so as to enable the photographers to become familiar with its qualities. Only close investigations of the material can give us a clue how to exhibit the particularities of the material. These preliminary investigations must be made in order to find the most suitable presentation of the motif.

In the case at hand, the elastic qualities of the full petrol tank could be optimally demonstrated in a drop test. For this purpose the full tank was dropped from a height of 3 m on to a hard surface, so as to observe the elasticity and the recovery ability of the material.

In our photo example the dropping of the tank was taken by a 35 mm film camera at a frequency of 200 pictures per second. The decisive phase of maximal deformation at impact



Top:

Non-carbon, self-copying paper showing color capsules.

Below:

Rupture test on an auto gasoline tank. Individual phases of the rebound taken at 200 fps.

on a pipe and the stations until the tank had fully recovered its shape were taken out as individual pictures, enlarged in between, recopied hard several times, and finally exposed in different colour graduations on top of each other. The picture on view as a whole shows in a pleasant way the immediate and quite objective impression of product behaviour.

Most tests have to be undertaken in a way similar to the example given here. It is immaterial, whether the product derives from the metallurgical, pharmaceutical, textile, or any other industry.

We can deduct from the above description, that for each task an individual photo technique has to be evolved. This means, that a very comprehensive technical equipment has to be available for photo-analyses. This refers especially to the optical installations. Microscopic apparatus must be available beside standard equipment for close-up and magnifying photography. This Institute disposes of all the current light microscopic systems and, in addition, of a separate section for raster-electronic microscopy. For special investigations an X-ray photo unit is available. Besides, ordinary photography cinematographical units are also used, as the above already shows. The technical range of this branch extends from the 16 mm film via the ordinary 35 mm film, with picture frequencies of 200 per second, to high frequency cinematography with a maximal frequency of 8.000 pictures per second. For the observations and process analyses of very fast moving objects, especially in the microscopic range, this Institute has developed spark-flashes for ultra high frequency pictures. With a spark timing of only 120 Nano-seconds ($120/1\,000\,000\,000$ sec.), clear micro-pictures can be taken from objects moving at 20 m per second.

Extensive installations for preparatory techniques facilitate investigations, tests, measurements, and phototechnical preparations for subjects from the most different ranges. A separate mechanical and electronic workshop enables us to construct all necessary technical auxiliary apparatus. This summary of existing installations is only to show which technical procurations are necessary in order to fulfill given tasks optimally.

Apart from all technicalities, the creativeness, decisive for the production of convincing pictures by placing each motif into its individual sphere, is to be mentioned especially.

The now following picture examples are to be understood in this way. This applies to the micro-photograph of urea crystals in polarised light (picture 2) as well as to the raster-electronic microscopic pictures (3—5). They all give information about a product in an impartial and becoming manner.

Especially the raster-electronic microscopy opens up new application ranges for propagation and documentation. The pictures are attractive and they allow the demonstration of structures and details in a way which has been unknown.

Dr. Bernhardt Brill



Top:

Inside of outer, protective tobacco leaf of Zigarillo/cigar showing fissures.

Below:

Urea crystals photographed under polarized light.

All photos taken by Dr. Bernhardt Brill, Hofgeismar.

PICTORIAL COMPOSITION AND SYNTHESIS

Rather like an insect which obtains an overall impression of its surroundings in the form of multi-images supplied by its facet-type eyes, so human beings receive an overall subjective picture through scanning a scene, since the angle of sharp vision is very limited.

The lenses used by photographers introduce a whole new set of criteria. This is a considerable challenge. Only those photographers who have learnt to use their eyes properly and can separate the essential from the trivial will survive in today's photographic climate. Klaus Fischer, a camera journalist in Berlin, put it this way: "The photographer who can pick out a coincidence from the everyday, permanent background, who can recognize the vital point in the course of passing events and capture it effectively on film, will have a greater chance of holding the reader's attention than the man who can only offer a random selection of hackneyed motifs."

Thus, framing the right section of the subject is one of the most important tasks facing any photographer. The typical and characteristic features of an event or scene must be pointed out with the aid of the camera, paying special attention to position, angle of view, focal length of the lens and depth of field. Of course, *every* photographer, consciously or not, exercises a certain compositional influence over his picture. The large-format photographer has, however, a much more satisfying control over his subject and, through the movements on his technical



One subject — but many versions. Klaus Hackenberg, Lauffen/Neckar, demonstrates here that the versatility of his view camera permits him to extract more aspects from a single motif than would be possible with a small hand-camera. Each individual photo has a particular charm of its own.

Subject: Portofino of the Ligurian coast of Italy. Taken with a 5x7" Linhof Kardan Color and Schneider Lenses on Agfachrome 50 S. Other data unknown. (Also see page 65)

camera, he can influence further factors, such as the perspective. On the large focusing screen he has a better view of his composition as a whole.

Every good photographer must know that the slightest alteration in viewpoint or camera angle results in a completely different perspective and picture section. Those working with a 35-mm camera usually rely on its speed of operation, shooting a series of photos from different angles. Later, the best shot is selected from the proofs. The large-format photographer, on the other hand, must devote more care to the composition and develop a positive feeling for design and form.

The choice of focal length and working aperture are two further factors of decisive importance for the final results. A telephoto lens compresses space; a wide-angle lens shows the full extent of a wide subject to the point of "artistic" distortion. A wide aperture restricts the depth of field to the essential part of the motif.

Exact arrangement and judicious cropping are vital at the exposure stage when using color reversal film. Such courage is not only the sign of a master but mere recognition of the fact that little can be altered later — in comparison to black-and-white or color negative. It is true, that the new reversal papers Kodak RC 14 and Cibachrome enable one to make sectional enlargements from slides as well, but this does not alter the fact that the conscientious photographer is wiser to learn how to exploit the full film format right at the exposure.

Page 64:

This shot of the roofs of Souillac was taken by Yan (Jean Dieuzaide), Toulouse.







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